



Environmental Policy Monthly

Environmental Protection Administration, Taiwan, ROC

Feature Column

Enhancing the Quality of Environmental Specialists

Pollution control and management technology are developing rapidly in response to increasingly complex environmental problems. Faced with limited human resources, the EPA is actively promoting the specialization of private services to handle industry and factory pollution control. Specialized knowledge and on-the-job skills are being strengthened to keep in step with technological advances and to assist government and industry protect the environment.

The EPA has formulated several regulations to actively promote specialization of environmental specialists, including the Regulations on Installing Specialized Organizations or Personnel to Handle Industrial Wastewater Treatment, drafted on 30 December 1988, followed by the Regulations on Installing and Managing Environmental Protection Specialist Organizations or Personnel, the Regulations on Installing and Managing Environmental Agent Technical Personnel, and the Regulations on Managing Waste Clearance Specialized Technical Personnel. Together, these regulations supported the creation of an "Environmental Specialist Certification System." This system regulates industry organizations responsible for pollution sources and requires these regulated industries and factories, based on scale and pollution output, to take precautions against pollution by installing specialized personnel who have successfully completed specialized training according to EPA qualifications.

Diversified Environmental Services - 14 Areas of Certification

Since the establishment of the Environmental Professionals Training Institute (EPTI) in July 1991, the EPA has been actively planning and conducting specialized training and management for pollution control personnel. Areas of training have expanded over the years from the initial fields of wastewater management, waste clearance and treatment, and toxic chemical substance management, to also include air pollution control, manufacture and sale of environmental agents, vector control, public and private premises air pollution equipment inspection, automobile exhaust systems and idle engine equipment inspection, automobile engine (in motion and idle) emissions inspection, motorcycle engine (in motion and idle) emissions inspection, diesel exhaust equipment inspection and vehicle noise inspection. In January 2007, gas station vapor recovery equipment testing and inspection was added to the

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above list of specialized training categories, for a total of 14 areas of certification. A cumulative total of over 140,000 people-times have undergone training. Over 120,000 people have obtained certificates. This is enough manpower to supply the over 13,000 regulated industry organizations and factories, where there is a total demand for over 15,000 environmental specialists.

Certificate Issuance and Management Advancing in Step to Assure Performance

Uncontrolled circumstances could result in release of pollutants into the natural environment without adequate treatment, for example, if pollution control facilities are operated or maintained by personnel lacking specialized skills, if operating personnel make a mistake or omission when reporting data, or don't understand the nature of pollutants. It is impossible to estimate the impact of such incidents on the ecology and on human safety, thus highlighting the critical importance of implementing an environmental specialist system to enhance the aptitude of frontline environmental specialists.

The primary goal in establishing the environmental specialist system is to enhance the effectiveness of pollution control among industry. The environmental specialist certification system cultivates specialized human resources and assists voluntary efforts to carry out environmental management and optimal pollution prevention and control at industry workplaces. The certification system also sets regulations on the duties of specialists so that environmental protection agencies can further direct improvements of industrial waste.

While the certification system provides initial training, the key factor to the certification system's success is whether trained certified specialists enter industry workplaces to effectively oversee pollution control and environmental management. Therefore, EPTI actively adopts various measures to enhance administrative and management performance, establish an information management system on the placement of specialists, provide advanced training courses to maintain specialist standards, strengthen specialists' work ethics, and provide refresher training and education to specialists. These measures help effectively promote and implement the environmental specialist certification system and continue to enhance the aptitude of environmental human resources.

Despite these proactive measures, efforts to raise

the quality of environmental specialists often run into problems. For example, certain high-polluting small-scale industries may be far detached from the newest environmental regulations, policies and technology, making them unable to respond to actual workplace requirements. This could lead them to turn to covert operations, which may result in uncontrolled release of pollution into the environment. In some cases, businesses looking to save expenses or certified personnel seeking personal gain will lend or borrow certificates and relegate work to unqualified or unskilled personnel. In other cases, trained specialists do not actively participate in on-the-job training or advanced training, or what they do learn does not accord with the actual needs of their position.

Advanced Certification Courses and On-the-job Training

Addressing the abovementioned problems, the EPA has adopted the following measures calling for active improvements:

1. Establish zones of specialization and jointly install pollution control treatment plants or facilities: Assist small-scale industries to establish centralized areas for specialized processes (for example, a designated area for electroplating processes), and jointly install pollution control treatment plants or facilities and hire specialists to jointly operate and manage all pollution control tasks including reporting, monitoring, and recordkeeping. Another option is to invite the government economic agency to provide guidance on making the switch to another field of industry.
2. Implement environmental specialist certification



▶ Training in visual testing of excessive exhaust

management mechanisms to prevent illegal use of certificates: In 1999, the EPA planned the establishment of the "Environmental Protection Specialist Placement Management System" to gain full command over basic data on the training, certification and placement of all specialists and technicians. Inspections are coordinated with local environmental protection agencies, and those found using their certificates in illegal ways have their specialist certification revoked.

3. Enhance certification training quality and courses: To maintain the professional standards of environmental certification, EPTI continually reviews certification training courses and materials so that environmental specialist skills and management resources match the actual needs of the market. The goal is to establish a standard of professionalism within the environmental specialist certification system.
4. Reinforce on-the-job training to match the needs of actual duties: Since the categorization of specialists in 1999, on-the-job training has been provided to each category of environmental specialist based on a rotational system. By the end of 2006, over 4,000

people-times have gone through on-the-job training courses. Apart from providing the latest information on environmental regulations, policies and related technological developments, this system also arranges forums with industry competent authorities, providing ample opportunities for industry and government to communicate and exchange views.

In terms of promoting specialization of environmental specialists, apart from training to provide an ample workforce of environmental specialists and meet the demands of this field of profession, the EPA also cultivates environmental specialists, technicians, and management personnel to meet the practical demands of the market and ensure that they learn the latest specialized knowledge. This benefits the industry by reducing management costs and pollution emissions. In future planning, the EPA will further promote specialized certification in the fields of environmental testing and analysis, environmental impact assessment, and underground petroleum storage tank monitoring to establish a comprehensive environmental specialist system and put into practice self-regulation mechanisms for pollution control.



▶ *Hands-on practice with waste clearance equipment*



▶ *Hands-on practice with pesticide sprayers to control disease vectors*

Air Quality

Taiwan's Air Quality Monitoring Steps onto the International Stage

Looking to enhance Taiwan's participation and visibility in the international arena, the EPA has signed an agreement with NASA to join two extensive monitoring networks, MPLNET and AERONET. Taiwan has also cooperated with NOAA to join a global observation network.

The EPA has conducted automatic monitoring of air quality for over a quarter of a century since 1982. There are currently 76 air quality monitoring stations now established throughout Taiwan. In response to international trends and the maturation of related monitoring technology in recent years, the EPA has additionally established a supersite for monitoring particulate matter (PM) in 2002. This supersite records concentrations of PM10 and PM2.5, as well as analyzes PM composition for sulfate, nitrate, organic carbon and elemental carbon. A Photochemical Assessment Monitoring Station (PAMS) was established in 2001 to monitor concentrations of ozone precursors (a total of 56 VOCs) and provide complete data on air pollution as a reference for drawing up related control measures and policies.

As domestic pollution sources have improved in recent years, the EPA indicates air pollution transmitted long distances from overseas has had

an increasingly marked effect on Taiwan's air quality. In order to gain command over the long-distance transmission of pollutants from East Asia and their effects on Taiwan and the world, the EPA has established an international air quality background monitoring station on Mt. Lulin (elevation 2,862 meters). This station monitors trace gases, mercury and PM, and can measure the degree to which offshore air pollutants affect Taiwan.

The EPA indicates that it has recently signed an agreement with NASA to join the global Micro-Pulse Lidar Network (MPLNET) and the Aerosol Robotic Network (AERONET). Taiwan has also agreed with NOAA to join its global observation network and is working with the USEPA on a cooperation plan to monitor long-distance transmission of mercury. Taiwan's participation in numerous international monitoring cooperation projects are expected to help in assessing the effects of global pollution transmitted to Taiwan.

General Policy

2007 Taiwan-Pacific Allies Environmental Ministerial Meeting Opens

Taiwan EPA held the 2007 Taiwan-Pacific Allies Environmental Ministerial Meeting at the Grand Hotel on July 26, 2007. Environmental ministers and senior official from Kiribati, Marshall Islands, Nauru, Palau, and Solomon Islands arrived in Taiwan to participate.

Dr. Winston Dang, Minister of Taiwan EPA, who had served at USEPA for 15 years in risk management and also served as director of international affairs of the Democratic Progressive Party, points out that Taiwan and the South Pacific belong to the same language family of Austronesia. Furthermore, from the standpoint of risk management, we share common concerns in environmental issues that are different from continental countries, especially disasters from sea-level rise and extreme weather events as a result of global warming. Such characteristics include loss of national territories from sea-level rise, droughts and mudslides from torrential rains caused by unusual climate, dislocated population from increased frequency of strong typhoons, etc.

In environmental issues, in addition to grouping the countries into developed, developing or emerging countries in terms of level of economic development, the United Nations has also formed a commission on

small island states, and one of the important common concerns is risk characteristics of pollution.

Dr. Dang also points out that like Taiwan, Kiribati, Marshall Islands, Nauru, Palau, and Solomon Islands are all island countries and must find common solutions through exchange of experiences.

Taiwan EPA indicates that in addition to sharing our experiences in pollution prevention and management, meeting our common responsibility in protecting the global environment, this meeting has an even higher level of cognition. Actually, the Pacific Islands are even more aware of the impacts of the global warming than Taiwan, and Taiwan EPA wishes to share the experiences with each other through this meeting. In particular, after overly expending natural resources, mankind has to humbly learn from islanders to live in harmony with nature, in order to make a turning point in our environmental crisis and move forward to a common sustainable future.

Waste Management

Waste Oil of Fast Food Restaurants and Noodle Makers to Be Regulated

To address the issue of energy shortage and reduce environmental pollution, the EPA will begin to regulate the flow of waste cooking oil from fast food restaurants and noodle manufacturers.

The EPA is working to build a win-win situation for economic development and environmental protection by guiding industry to recycle waste cooking oil into biodiesel. The first step toward this goal is to control the flow of waste oil from fast food restaurants and noodle manufacturers.

From 1 September 2007, the EPA will control all waste cooking oil generated by the nation's 588 large-scale fast food chains and noodle manufacturers. Designated enterprises are required to submit waste clearance plans and report waste clearance flow online. The EPA will provide guidance to these enterprises so that all waste cooking oil used for frying chicken, fries, and noodles (around 13,780 tonnes per year) is recycled into biodiesel by recycling organizations.

The EPA indicates that biodiesel production has been underway in other countries for many years, and the recycling of waste cooking oil into biodiesel is already a new trend. Taiwan generates as much as 70,000 to 85,000 tonnes of waste cooking oil every year, about 72%~80% of which is from the fast food industry, food factories and the food and beverage industry. If this large amount of oil is not appropriately recycled

and is instead incinerated along with other garbage, the combustion of such oils could generate dioxin. To effectively control the flow of waste oil and prevent haphazard disposal, as well as put it to good use after recycling, the EPA has targeted some of the larger fast food chains and noodle manufacturers. The regulation will require 588 enterprises to submit industrial waste clearance plans.

The EPA emphasizes that waste cooking oil generated by households, schools and organizations accounts for 20%~28% of the national total. If this waste material is not appropriately collected and directly released into the sewer system, it will not only affect human health but will also seriously pollute river water quality. To ensure that waste cooking oil can be recycled into a usable material, the EPA is urging households, schools and organizations to give their waste cooking oil to local sanitation crews for recycling into biodiesel by recycling organizations. Local sanitation crews are also required to report the amount of waste cooking oil collected so as to gain accurate command over the generation and recycling of the nation's waste cooking oil.

General Policy

Poll: 86% of Households Satisfied with Garbage Collection System

According to the latest public opinion poll conducted by the EPA, 86% of people are satisfied with the current garbage collection system. According to survey respondents, areas of environmental protection that the government should prioritize in the future include upkeep of environmental sanitation and control of motor vehicle emissions.

To better understand how citizens feel toward various environmental problems - information that will help in formulating future administrative planning - the EPA conducted a public opinion poll on the administration of environmental protection work from 18 April to 8 May 2007. Poll themes included "air quality," "quietness of residential areas," "drinking water and river water quality," "environmental sanitation and waste," and "overall impression" with regard to environmental issues in everyday life.

Poll results show that 56% of respondents in the last year have experienced the effects of air pollution outdoors, with the main pollution source being motor vehicle exhaust. When asked about the peacefulness of their neighborhoods, 49% of respondents reported noise disturbances within the past year, with traffic and neighbors being the main noise sources affecting people's lives.

In order to promote resource recycling and achieve the goal of "Complete Sorting for Zero Waste," the

government has been promoting the reduction of waste at its source as well as various recycling initiatives. These measures have been met with a high level of acceptance, with 86% of survey respondents expressing satisfaction with the current garbage clearance system. Only 12% were dissatisfied, with the main reasons being that either they were unable to coordinate with the pickup schedule or garbage collection was not on time.

As for respondents' views on six indicators of environmental sanitation problems, namely, illegal postings or spray paint advertisements, dog feces, litter, unkempt public toilets, clogged or odorous sewers, and unkempt vacant lots, the average score was 3 on a scale of 1 to 5. This shows that citizens are only moderately satisfied with the state

of environmental sanitation, and there is room for improvement. It is hoped that joint participation of citizens and government in the "Citizens' Neighborhood Cleanup" will result in a cleaner Taiwan.

In the coming year, citizens hope the government can prioritize strengthening efforts in maintaining environmental sanitation and controlling motor vehicle emissions. Other areas of mention include control of factory emissions, drinking water safety and environmental education outreach.

This poll was conducted over telephone with respondents living in Taiwan and over 20 years of age. A total of 4,734 effective samples were collected with a 95% confidence level and a ± 1.42 margin sampling error.

Toxic Substance Management

Two Strikes Rule for Toxic Substance Violations

The EPA has preliminarily announced two draft regulations - the Toxic Chemical Substance Permit Registration and Review Management Regulations and the Toxic Chemical Substance Hazard Prevention and Response Plan Implementation Regulations. These two regulations stipulate that permits will not be extended for toxic chemical substance handlers who incur two penalties in one year or who have not handled toxics for three consecutive years.

In response to revisions made to the Toxic Chemical Substances Control Act (毒性化學物質管理法) on 3 January 2007, the EPA is actively working to complement revisions and draft relevant bylaws. The EPA recommends toxic chemical substance handlers refer to the draft Toxic Chemical Substance Permit, Registration and Approval Management Regulations (毒性化學物質許可登記核可管理辦法) to get an idea of future regulations concerning application, review, issuance and annulments of toxic chemical substance permits, registration documents and review documents.

Making it more convenient for entities to apply for toxic chemical substance handling permits or approval, the EPA encourages handlers to register online. In the future, written hardcopy application and registration will not be necessary for toxic substances slated for export, and handlers need only apply for export examination documents according to the "Export/

Import Merchandise Electronic Visa Management Regulations."

The draft Toxic Chemical Substances Hazard Prevention and Response Plan Implementation Regulations (毒性化學物質危害預防及應變計畫作業辦法) focuses on specifying deadlines, categories and content of hazard prevention and response plans. Enterprises are required to undergo reevaluation every two years, and if changes are made to types of substances or place of manufacture or storage, the enterprise shall submit information on such changes 30 days before they occur. Information under the third category of toxic chemical substances' hazard prevention and response plans shall be open to the public for perusal.

For more information on the bylaws of these two regulations, please visit the draft ordinance preannouncement section of the EPA website (<http://w3.epa.gov.tw/epalaw/>).

EIA

List of New EIAC Members Announced

At the end of July, the EPA held a meeting to select the new term of Environmental Impact Assessment Commission members. Fourteen new commission members were chosen from a list of over 90 nominated experts and scholars from a wide range of backgrounds including natural and human sciences, environmental

management and strategic environmental assessment.

The sixth term of the EPA Environmental Impact Assessment Commission (EIAC) ended on 31 July 2007. A selection meeting was held on 24 July 2007 to choose the next term of commission members. The 14 new commission members and their academic background are listed below.

According to Article 4 of the EIAC organizational rules, the commission shall comprise 21 members, including the EPA Minister and Deputy Minister who alternately serve as director and deputy director of the commission, as well as five representatives from related government agencies. The remaining 14 positions are to be selected by the commission director from a list of nominated academia specializing in environmental impact assessment and experts and scholars with related practical experience. EIAC members are in office for two years. Experts and

scholars may serve two consecutive terms, but half of the commission should be new members upon each new term.

The EPA indicates that it has followed the rules in the selection procedural guidelines by requesting a list of nominees from all circles from 26 June 2006 to 10 July 2007. A total of 94 experts and scholars were nominated during this period. The EPA deputy minister then convened a selection meeting on 24 July 2007 with five experts and scholars from different fields and five government agency representatives. The directive for this meeting was to select a group of members to show a balanced representation of the three broad categories of "natural and human sciences," "environmental management," and "environmental assessment of government policies." According to EIAC organizational rules, after a

 *List of experts and scholars on the 7th term of the Environmental Impact Assessment Commission*

Name	Current occupation
Dr. Chen-Tung Arthur Chen (陳鎮東)	Professor of the Department of Marine Environment and Engineering, National Sun Yat-sen University
Dr. Chin-Dee Lee (李錦地)	Honorary Chairman of the Taiwan Society for Environmental Management
Dr. Fan-Chieh Yu (游繁結)	Professor of the Department of Soil and Water Conservation, National Chung Hsing University
Dr. Fu-Tien Jeng (鄭福田)	Professor of the Graduate Institute of Environmental Engineering, National Taiwan University
Dr. James Lee (李界木)	Former Director General of the Science Park Administration and former EPA Deputy Administrator
Dr. Lee, Yuh-Ming (李育明)	Professor of the Institute of Natural Resource Management, National Taipei University
Dr. Yue-Liang Guo (郭育良)	Professor of the Institute of Occupational Medicine and Industrial Hygiene, National Taiwan University
Dr. Gu Yang (顧洋)	Professor of the Department of Chemical Engineering, National Taiwan University of Science and Technology
Dr. Chyan-Chyuan Huang (黃乾全)	Professor of the Department of Health Education, National Taiwan Normal University
Dr. John Chien-yuan Lin (林建元)	Commissioner of the Taipei City Department of Finance (Professor of the Graduate Institute of Building and Planning, National Taiwan University)
Chen Kwang-tzuu (陳光祖)	Associate Research Fellow, Institute of History and Philology, Academia Sinica
Dr. Kuang-Lung Fan (范光龍)	Professor of the Institute of Oceanography, National Taiwan University
Guo Horng-yuh (郭鴻裕)	Research Fellow, Agricultural Chemistry Division, Taiwan Agricultural Research Institute Experimental Farm, Council of Agriculture, Executive Yuan
Dr. Su-Jan Lin (林素貞)	Professor of the Department of Environmental Engineering, National Cheng Kung University

recommended list of members is produced, the commission director (EPA minister) is asked to make the final decision.

The EPA stated that the new list of EIAC members comprises many prestigious figures in academic fields. The 12 experts and scholars selected possess

specialized talents and rich experience in the area of environmental impact assessment. In facing the various aspects of environmental assessment review work in the future, this will assure quality reviews and will live up to society's expectations.

Waste Management

Waste Incinerator Bottom Ash Reuse Methods Stipulated

The EPA announced revisions to the management methods for reusing bottom ash from waste incineration plants. In terms of bottom ash generated from the incineration of general waste, the new methods stipulate bottom ash handling methods and monitoring standards before reuse, delimit product categories and uses after recovery, and call for compulsory online reporting. These provisions go toward ensuring the environment is not harmed and that appropriate engineering applications are found.

In order to strengthen management of the reuse of waste incineration plant bottom ash, the EPA announced revisions to the Municipal Waste Incinerator Bottom Ash Reuse Management Methods (一般廢棄物-垃圾焚化廠焚化底渣再利用管理方式) on 26 July 2007. The Methods call for sorting and screening pretreatment of bottom ash before it is recycled into products, designate quality standards for each category, and delimit applications for recycled products. Reuse organizations must report production quantity, flow, and implement a three-tiered management system to control bottom ash quality.

According to the EPA, incinerator bottom ash is low in heavy metals, and after employing magnetic screening, sorting and other treatment procedures to remove valuable ferrous and non-ferrous metals, the resulting product can be further sorted for use as construction-grade materials, or additives in bricks, asphalt and concrete. Domestic and foreign research shows that these materials can be used as substitute materials in road foundations, bricks, and concrete. Other countries have found widespread applications for such materials in roadways, fill, and embankments. For example, Europe recycles as much as 60% of incinerator bottom ash, and Denmark and Holland take the lead, recycling up to 90% of their bottom ash. In order to promote the reuse of waste incinerator bottom ash, the EPA had already announced revisions to the Municipal Waste Incinerator Bottom Ash Reuse Management Methods on 11 October 2002 and 12 June 2003. From 2003 to the end of 2006, over 840,000 tonnes of bottom ash had been reused as backfill in roadway ditches and as an additive to asphalt.

In order to ensure environmental safety and construction quality when reusing incinerator bottom

ash, the EPA has referenced other nations' waste reuse grading and management systems. The EPA has also added a three-tiered quality assurance system for public engineering projects in this new round of revisions. The new revisions underwent a period of public hearings and discussions to deliberate the responses and views of all circles and set appropriate rules on the reuse of waste incinerator bottom ash.

The EPA indicates that the management methods for reusing bottom ash stipulate that after going through sorting and screening pretreatment measures, reused products made from bottom ash are classified into three categories for which specific quality standards and reuse applications are determined. Before reusing such materials, recycling organizations must ensure that every 500 tonne batch of materials undergoes heavy metal Toxic Characteristic Leaching Protocol (TCLP) testing, and analysis of chloride ion content and dioxin TEQ concentration. After confirming compliance with quality standards for each category or reused products, the materials may be applied toward specific uses according to regulations.

A three-tiered management system is also stipulated in which reuse organizations implement the first-tier independent quality control system, county and city governments implement the second-tier quality assurance system, and the EPA implements the third-tier quality inspection system to ensure the quality of reused products containing bottom ash. This system prevents environmental hazards during reuse and controls bottom ash after reuse. Reuse organizations are required to report production volume, flow and records on paper and online to ensure that environmental agencies maintain precise command over the details of bottom ash reuse.

The revised Municipal Waste Incinerator Bottom Ash Reuse Management Methods is posted on the EPA website at <http://w3.epa.gov.tw/epalaw/index.aspx>.



Waste incinerator bottom ash handling methods will be regulated

Green Mark

Government Green Procurement Rate Up to 88%

The EPA has announced the government green procurement results for 2006. Government agencies spent over NT\$6.38 billion on green products and 88% of spending within the available green procurement product categories went toward purchases of green products. This far exceeds last year's targeted rate of 80%.

Looking at government performance on green procurement in 2006, those agencies receiving outstanding evaluation results include seven agencies under the Executive Yuan - the Coast Guard Administration, the Ministry of the Interior, the Ministry of National Defense, the Central Trust of China, the Council of Agriculture, the Ministry of Transportation and Communications, and the Ministry of Finance. Nineteen county and city governments, including Hsinchu County, also received outstanding evaluation results. These agencies were deemed excellent performers for reaching the targeted percentage of spending in designated green product categories, and establishing internal green procurement promotion plans and evaluation measures.

The EPA stated that the government showed overall good performance in terms of green procurement in 2006, owing to each agency's familiarity with green procurement concepts and promotion of related measures. The Central Trust of China provided mutual supply contract methods, listing environmental products among the designated procurement

categories for government agencies to choose from. This has effectively enhanced green procurement efforts and guaranteed robust growth of government green procurement. Looking at spending by agencies that performed well on green procurement, the Ministry of Education spent NT\$714 million, the Ministry of Economic Affairs spent NT\$515 million, the Ministry of National Defense spent NT\$453 million, Taipei City Government spent NT\$418 million, Taoyuan County Government spent NT\$398 million and Taipei County Government spent NT\$364 million. Further analysis shows that most spending was in the category of office equipment, accounting for 65.2% of all green procurement. Electronics accounted for 13.9% and office stationery and supplies accounted for 10.1%.

The EPA has established the "Green Procurement Results Online Report System" to expand the effectiveness of government green procurement, increase the convenience of government information and wield effective and timely command over outcomes. This system was officially launched on 1

August 2007, allowing enterprises to use this speedy electronic method of reporting government green procurement results. The system also facilitates

statistical analysis of product quantities and produces quantified data on the beneficial effects on the environment.



▶ *Taiwan government's green procurement results for 2006 far exceeds last year's target*

Air Quality

Handbook on Plants to Purify Indoor Air Available for Download

How can you more effectively purify the quality of indoor air? One of the best ways is to raise indoor plants. The EPA has compiled a handbook on plants that can purify indoor air that is available for downloading on the EPA website.

Cultivating indoor plants is an effective way to raise overall indoor air quality. The EPA has cooperated with a research institute in coming up with some of the most suitable indoor plants out of the fifty most commonly used indoor plants in Taiwan for improving air quality. The results of this project are published in a handbook, which also instructs how to care for these plants. Those interested in downloading the handbook can do so at the following website (http://ivy2.epa.gov.tw/out_web/f/noise/air/G07.html). The handbook will also be available soon in bookstores.

The EPA stated that in poorly ventilated offices and classrooms, carbon dioxide concentrations can reach over 600 ppm. Plants that can be used to improve this situation include African Violets, Emerald Ripples, Gloxinia, Climbing Figs, Pink Polkas, Malabar Chestnuts, Jonquils, Potted Chrysanthemums, Tuffroots, Alocasia, Asplenium, Platycerium Wallichii Hook and Pileas. The handbook notes that adequate

natural light should be provided to ensure optimal conditions for reducing indoor carbon dioxide.

For homes with high dust concentrations due to proximity to roadsides or construction sites, African Violets, Iron Cross Begonias, Climbing Figs, Gloxinia, Potted Chrysanthemums and Boston Ferns are good bets, but leaves have to be washed regularly in order to maintain purification efficiency. Those homes undergoing refurbishing or new paint jobs can use Tuffroots, Indian Rubber Trees, Boston Ferns, Asplenium, Chinese Ivy, Orchids and African Violets to help lower the indoor levels of formaldehyde, benzene and xylene.

In order to improve indoor air quality, the EPA urges the public to consider growing one plant in at least a six-inch pot for every nine square meters of floor space. It is also important to keep plants in well-ventilated areas with access to ample sunshine for optimal indoor air quality results.

News Briefs

Standards for Defining Hazardous Waste Revised

Responding to recent repeated occurrences of illegal methods for disposing of mixed metal waste materials, in order to strengthen management of waste electric cables (excepting enterprises using physical treatment methods) and electroplate metal-plastic waste (including CDs), the EPA sets regulations on these items under the Waste Disposal Act (廢棄物清理法). On 4 July 2007, the EPA promulgated revisions to Charts 1 and 2 under Article 3 of the Standards for Defining Hazardous Waste (有害事業廢棄物認定標準). This revision was made with reference to international control concepts on the import and export of hazardous industrial waste, out of concern for the hazards waste electric cables and electroplating metal-plastic waste pose to human health and the environment. Definitions during different clearance and treatment stages have been adjusted in the section on "mixed metal waste controls."

Toxic Substances Control Act Bylaw Revisions Drafted

On 13 July 2007, the EPA issued a preannouncement of draft revisions to five regulations under the Toxic Chemical Substances Control Act: the Toxic Chemical Substance Transportation Management Regulations (毒性化學物質運送管理辦法); Regulations Governing the Review of Applications to Remove Restrictions and Prohibitions of Toxic Chemical Substances (毒性化學物質申請解除限制禁止審核辦法); Regulations Governing Toxic Chemical Substances Safety Information Charts and Labeling in Container, Packaging, and Handling Facilities (毒性化學物質容器包裝運作場所設施標示及物質安全資料表管理辦法); Regulations Governing Toxic Chemical Substances Emergency Response Equipment, Detection and Alarm Equipment (毒性化學物質應變器材及偵測與警報設備管理辦法); and the Guidelines on Regulated Toxic Chemical Substances and the Management of Their Handling (列管毒性化學物質及其運作管理事項). Details of these draft revisions can be found on the preannouncement section of the EPA website (<http://w3.epa.gov.tw/epalaw>).

Toxics Liability Insurance Requirement Expanded to More Industries

In light of the hazards that the aftermath of toxic chemical substances (TCS) disasters can impose on human health, the EPA has initiated a post-disaster compensation system and has promulgated the Toxic Chemical Disaster Handling Liability Insurance Regulations (毒性化學物質運作責任保險辦法). The list of targeted enterprises for which this regulation is applicable has been expanded to include not only enterprises that manufacture, use, store, or transport TCS of acute toxicity (Class III), but also enterprises that handle TCS of persistent toxicity (Class I) and chronic toxicity (Class II). Regulated enterprises

must possess liability insurance before handling any of these substances. This insurance is compulsory, and any enterprises without liability insurance will be penalized with fines ranging from NT\$1 million to NT\$5 million. The EPA hopes that this measure will prompt industry to place more importance on enhancing safety management of premises where toxic chemical substances are handled, as well as actively adopt prevention measures to ensure that peoples' lives and property are protected.

Offshore Wind Turbine Installation to Undergo EIA

In consideration of impacts that offshore wind turbines may have on the surrounding environment, the EPA announced on 23 July 2007 that according to Article 5 Item 1~11 of the Environmental Impact Assessment Act (環境影響評估法) and Article 32 of the Standards for Determining Specific Items and Scope of Environmental Impact Assessments for Development Activities (開發行為應實施環境影響評估細目及範圍認定標準), installation of wind turbines off the coast is indeed a development activity for which EIA is required.

Taiwan-Japan Exchange of Refuse Incineration Technology

On 16 July 2007, the EPA held the Refuse Incineration Technology Forum, inviting Japanese and domestic technical experts on municipal waste incineration to discuss the latest incineration treatment technology through special topic lectures and sharing of experience with county and city environmental protection bureaus and incineration plant operators. The forum highlighted the latest trends in incineration technology with the hope of refining Taiwan's incineration plant operating technology. Two Japanese experts with extensive experience in operating incineration plants delivered special topic lectures on raising the efficiency of incineration plant power generation facilities and an assessment of incineration of food waste. These topics were chosen to enhance the efficiency of incinerator plant power generation and assist plants in effectively operating plants now that food waste recycling has changed the characteristics of refuse. Domestic experts were invited to introduce new era of incinerator stack anti-oxidation technology and incinerator ash and residue treatment and reuse technology.

Green Packaging Design Contest

The EPA is holding the "Green Packaging Design Contest" to encourage companies to design and manufacture environmentally friendly and creative packaging. All domestic designers or manufacturers of product packaging are invited to submit packaging samples of products on the market and register before 31 August 2007. The EPA states that the selection will be

divided into two sections for "gift boxes" and "other products," with the two main criteria evaluation being green and creative design. Green packaging design will account for 60% of overall score and includes packaging reduction, toxin reduction, reusability and recyclability. Creative packaging design accounts for 40% of overall score and includes form, structure, materials and aesthetics. Five outstanding products will be selected in each of these two categories and winners will be announced before the Mid-Autumn Festival. Rules for this activity can be downloaded from the Restriction on Product Overpackaging website at <http://www.epa.gov.tw/package>.

Green Living Expo 2007

The EPA sponsored the 2007 Green Living Expo at the Taipei World Trade Center from 26~29 July 2007, an event that attracted tens of thousands of participants. Apart from showing domestic Green Mark products, the expo featured the central government's efforts to promote green living, including CO2 reduction, resource recycling and green consumption measures. The event also highlighted interactive educational displays, games and prize quizzes. The expo kicked off with a ribbon cutting ceremony in Hall A of the Taipei WTC at 11:00am on 26 July 2007, jointly presided over by EPA Secretary-General Tung Te-po (董德波), Ministry of Economic Affairs Administrative Vice Minister Dr. Ho-Shong Hou (侯和雄), Bureau of Energy Director-General Yeh Huey-ching (葉惠青), Water Resources Agency Deputy Director Dr. Tsung-Shen Liao (廖宗盛), and Taipei County Deputy Commissioner Lee Hung-yuan (李鴻源). After the opening ceremony, the EPA handed out prizes for outstanding articles promoting green living. The purpose of the expo was to call on all people to develop their own philosophy of green living to reduce our environmental footprint and establish a high quality living environment in which all resources are continually recycled.

Drinking Water Quality Standards Revised

Considering the health risks caused by pollutants in drinking water, the EPA is referencing each nation's drinking water quality standards and looking at the feasibility of conducting an integrated assessment of the

domestic situation, analysis, treatment technology, and economic benefits. The following related revisions are being planned for Article 3 of the Drinking Water Quality Standards (飲用水水質標準): 1) control standards for the two heavy metals lead and antimony will be tightened; 2) the scope of control for bromate has been amended to not only cover water supply system treated with ozone disinfectants, but all water supply systems; and 3) new stipulations have been added to control chlorite and dioxin.

First "Environmental Cup" Recycling Debate Contest

Encouraging junior college students to pay heed to environmental issues, the EPA held the first "Environmental Cup" nationwide junior college recycling debate contest. The event kicked off on 24 July 2007 with EPA Deputy Minister Chang Tzi-chin (張子敬) presiding over the opening ceremony and helping run the contest. College student contestants took turns with a warm up debate contest asking and answering interesting questions about recycling in everyday life. The event provided a look into the degree of understanding college students have about resource recycling.

Flashy Vests for Environmental Workers in 2007

The EPA has taken up the task of renewing the image of environmental protection, enhancing the safety of recyclers and frontline environmental sanitation workers, and increasing their willingness to wear reflective vests. This was accomplished through the sponsoring of a nationwide "Environmental Vest Creative Design Contest" held by the Tainan City Environmental Protection Bureau. Vest designs will be evaluated for style, overall design, and environmental materials by a panel of experts. Seventeen reflective vest designs were chosen based on their compliance with requirements for safety, comfort, environmentally friendly materials, and sense of fashion. The top three winners received awards ranging from NT\$20,000 to NT\$50,000. Based on a report by the US Department of Transportation's National Highway Traffic Safety Administration, reflective markings on the sides and rear of vehicles can reduce 21% of nighttime collisions, attesting to the importance of reflective vests to environmental protection workers' safety.

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