



Environmental Policy Monthly

Environmental Protection Administration, Taiwan, ROC

Feature Column

Leading the Privatization of Environmental Services

Limited environmental manpower in the public sector is stretched to keep up with the growing demands of increasingly complex environmental protection work. The EPA is actively fostering the development of private services to share the load of environmental work. Advancement of the environmental service industry is at the core of the EPA's work to promote green production and environmental business opportunities.

Rapid commercial growth has taken a heavy toll on the environment, and heightened public environmental awareness has given rise to an endless stream of environmental nuisance disputes in recent years. This highlights the need for appropriate investment in manpower and active measures to improve environmental pollution, raise environmental quality, and pursue sustainable development.

Environmental Services Booming with Increased Production Value

Taking steps to actively promote environmental industry, the Executive Yuan ratified the "Service Industry Development Guidelines and Action Plan" on 15 November 2004, listing environmental services among 12 service industries. Another plan was formulated to provide guidance to recycling services with the purpose of attaining complete sorting and zero waste goals through recycling, reuse, green production and green consumption.

According to a survey on the state of the environmental service industry conducted by a private enterprise contracted by the EPA, the industry can be classified into the three categories of environmental equipment manufacturers, environmental services and environmental engineering and installation. Environmental services are further divided into nine subcategories of air pollution control; water pollution control; waste management; soil and groundwater pollution remediation; noise and vibration control; environmental analysis, monitoring and evaluation; environmental research and development; environmental education, training and information; and vector control.

Survey results show that by the end of 2005, domestic environmental services had an output value of nearly NT\$57.4 billion, growing over NT\$17.7 billion from the previous year (2004). The waste clearance and treatment industry accounted for the majority (40.6%) of output value at over NT\$23.2 billion. The recycling industry took second place at over NT\$21.5 billion.

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Environmental analysis and vector control services generated the lowest output value.

Looking at average output values, in 2005, the average output value of each environmental service enterprise was NT\$18,623,000, showing a growth of NT\$4,048,000 compared to 2004 and revealing a current stage of annual growth. Among all environmental services, the recycling industry recorded the highest output value per company of NT\$30,706,000, followed by the environmental engineering consulting industry at NT\$30,301,000. The vector control industry earned the least at NT\$2,965,000 per company on average.

As environmental issues become increasingly important, green business opportunities will gradually expand, and environmental services must accommodate these trends by grasping domestic and foreign future market demands, enhancing environmental technology and creating high value-added services. This will strengthen competitiveness and create economic value to assure sustainable management of the service industry. .

Integrating Knowledge and Technology to Build High Value-Added Industry

In terms of promotion and development strategies to cultivate private environmental manpower and encourage environmental services, the EPA will work toward the following improvements:

1. Evaluate government environmental services policy, and improve management environment
2. Establish appropriate environmental regulations and reinforce public authority
3. Promote industry-government-academia cooperation to benefit the environmental service industry
4. Integrate traditional knowledge and innovative technology to create high value-added industrial technology
5. Unify national standards and promote environmental management certification system; ensure that certification system concur with international trends
6. Adjust government control and finance measures to complement goals, and provide effective guidance and incentive measures

Development of the environmental service industry not only enhances domestic environmental quality but also creates new employment opportunities and reduces Taiwan's dependence on technology from advanced nations. This provides considerable savings in terms of foreign exchange while also increasing exports and reviving domestic economic development.

The objectives for cultivating the environmental industry are to pursue sustainable development and ensure optimal pollution control, reduce waste, and recycle resources. The government will assist industry in the areas of pollution prevention, green design, and clean production by helping establish and ensure implementation of comprehensive environmental management systems (EMS). The establishment of EMS is integrally related to international development, for which the following three prospects have been forged:

1. Become a leading supply nation for Southeast Asia (including China) environmental protection systems, equipment, and materials, and establish market brands
2. Cultivate Taiwan as an advanced nation in the Asia region, serving as an operations hub to assist production and promotion of environmental products.
3. Integrate environmental technology teams to take on international environmental contracts and BOT (build-operate-transfer) project services. Become the leading environmental technology service



- ▶ *Waste clearance and treatment industry accounted for the majority output value in environmental services*

support country in the Asia region and generate profitable foreign exchange. Actively participate in

international environmental activities and establish a national image of environmental diplomacy.

General Policy

Taiwan Open to Environmental Dialogue with China under Reciprocal Conditions

During a recent meeting with delegates from the US, EPA Minister Winston Dang addressed US inquiries regarding transboundary pollution problems between Taiwan and China. Dang iterated Taiwan's willingness to work on the basis of reciprocity in opening negotiations with China on this issue and discussing possibilities for environmental cooperation.

On 26 and 28 June 2007, EPA Minister Winston Dang (陳重信) met with US scholars from a Washington DC think tank and the vice governor of Washington State during their visit to Taiwan to promote trade and friendly relations. During the two meetings, the US expressed concern over environmental issues in the region, inquiring Minister Dang as to whether there are problems with transboundary pollution between Taiwan and China. China's booming economic development in recent years has spurred an insatiable demand for energy, resulting in a steady push for the construction of thermal power plants. Pollution emissions from

thermal power plants are often transported to Taiwan via northeasterly winds. The same winds also place Taiwan in the path of China's dust storms every winter and spring, greatly affecting Taiwan's air quality. Minister Dang expressed that Taiwan has accumulated a great deal of experience in pollution control throughout its economic development and is willing to share this experience with China. Dang stated that Taiwan is willing to commence dialogue with China under reciprocal conditions and engage in environmental cooperation to improve the environmental quality of the region.

Air Quality

Fifth Stage Motorbike Emission Standards Effective from July 2007

The fifth stage of emission standards for motorbikes took effect from 1 July 2007. The EPA recommends that when purchasing new motorbikes, people should be sure to choose low-polluting vehicles in compliance with the fifth stage emission standards.

Over the past several years, the EPA has gradually tightened emission standards to reduce pollution from motorbike exhaust. The fifth stage emission standards became effective from 1 July 2007. According to the EPA's test data on motorbikes, the following five engines have already obtained fifth stage emission standard certification: KYMCO's G200SN20-07, G125SR25-08 and G125SJ25-07; Sanyang's G150HEA-07; and MPI's G150F3E-07. These models will soon be on the market and in mass production. Currently undergoing the certification process also includes two other models by KYMCO and one model by Yamaha. Other manufacturers are currently making preparations to

follow suit.

The EPA indicates the main differences between the fourth and fifth stage emission standards for motorbikes are stricter emission standards for CO, HC and NO_x. For example, the threshold for CO has been tightened by a factor of 3.5 from the original 7.0 g/km to the current 2.0 g/km. For HC and NO_x, the original standard was set at 2.0 g/km for the two combined (HC+ NO_x), while the new standards treat each pollutant separately with a limit of 0.8 g/km for HC and 0.15 g/km for NO_x. Stipulations have also tightened the guarantee period for emission control systems on new model motorbikes from 2.5 years to 3 years.

Water Pollution Regulations Extended Over 23 More Industries

In December 2005, the EPA announced its extension of water pollution controls over an additional 23 industries to strengthen control over water pollution sources. The measure became effective on 1 July 2007.

On 6 December 2005, the EPA announced 23 types of businesses would be included in water pollution control measures. Enforcement of this regulation commenced on 1 July 2007. Before the said businesses make any new installations or changes to facilities, they are required to submit water pollution control measure plans, obtain a permit before discharging wastewater (effluent), and comply with relevant discharge standards to install specialists to manage and operate wastewater treatment facilities. The said businesses must also regularly test and report wastewater management operating conditions, and obtain water pollution control permits before 30 June 2008. From 1 July 2008, failure to abide by these stipulations will be subject to penalization.

In order to strengthen water pollution controls, the EPA indicates that both water volume and quantity shall undergo strict management for 14 industries, including spas, hot springs restaurants, animal hospitals, facilities storing petroleum products or hazardous waste, food manufacturing industries within tap water quality and quantity protected areas, automobile repair shops, amusement parks, laundry services, livestock operations, medical institutions, food and beverage industry, and tourist hotels. Those enterprises discharging over 10 cubic meters per day or with original wastewater quality recorded at over 250 mg/l biological oxygen demand (BOD), over 500 mg/l chemical oxygen demand (COD), or over 500 mg/l suspended solids (SS) have been included as control targets under this regulation and must comply with the relevant water pollution control regulations from 1 July 2007.

Enterprises in the food and beverage industry, for example, must first obtain a wastewater discharge permit or simple permit before discharging wastewater. The water quality of discharged wastewater must be within 50 mg/l BOD, 150 mg/l COD, 50 mg/l SS, and 300,000 CFU/100ml fecal coliform count. Violators could face fines ranging from NT\$60,000 to NT\$600,000, and will be required to make corrections before a given deadline. Failure to meet this deadline shall incur continuous daily

penalties.

The EPA has made detailed stipulations to address the special characteristics of particular industries. For example, the mining industry, earth removal industry, earth processing industry, cement industry, earth storage facilities, construction sites, before digging or piling earth, shall first set up waterproof barriers to prevent rain from entering the site and a settling pond to collect and treat the first flush of rainwater and vehicle wash water. At petroleum product storage facilities, the ground underneath storage containers should be covered with concrete or impermeable surface with sidewalls to prevent leakage, and gutters on the outside to intercept leaked oil. Food and beverage enterprises should install grease traps and the intercepted oils shall undergo treatment facilities. Unadulterated hot springs water effluent shall be collected separately from restaurant and bathwater effluent, and channeled through treatment facilities to remove hair and suspended solids.

Enterprises unclear about related regulations are encouraged to inquire their local EPB. If required to install treatment facilities, enterprises can inquire related unions of environmental engineers or environmental facilities. Contact information and websites can be found on the EPA's website under the service section for industrial water pollution control.



▶ *More businesses required to manage and operate wastewater treatment facilities*

Recycling of Waste Asphalt Now Mandatory

Taiwan has been successively announcing eight kinds of raw materials as mandatory recyclable resources, reflecting inflation of raw material prices worldwide as well as increasing domestic demand for raw materials in construction. Enterprises are asked to report all waste asphalt by the end of July at the latest.

With the rising prices of raw materials as well as the increasing demand to resurface the asphalt on roadways, Taiwan is now enforcing the reuse of waste asphalt. This will reduce costs and alleviate problems caused by raw material shortages. The EPA and the Ministry of Transportation and Communications (MOTC) first announced asphalt and other substances as recyclable resources. The Construction and Planning Agency under the Ministry of the Interior followed suit by announcing in April this year (2007) that waste asphalt produced by the construction industry shall be treated as a recyclable resource. All related enterprises are required to abide by relevant regulations in the Resource Recycling Act (資源回收再利用法) by reporting all asphalt waste before the end of July 2007.

The Resource Recycling Act was drafted in July 2002 to reduce the burden on the environment, cultivate sustainable use of resources, decrease the generation of waste and promote reuse and recycling. This went into effect one year later in July 2003. To date, the Industrial Development Bureau and the EPA have already announced seven types of construction waste

as recyclable resources, including water-quenched blast furnace slag, titanium chloride slag, and plastic, glass, aluminum, copper and steel from waste IT and electric/electronic product treatment plants. Taiwan generates as much as four million tonnes of waste asphalt annually. This material has reuse value, and the associated technology is already mature. Given that Taiwan relies heavily on imported sand and stone raw materials, waste asphalt has been added to the list of recyclables in hopes of achieving sustainable use goals.

The EPA has already set up a comprehensive management system to handle the eight abovementioned recyclable resources and ensure tight command over the origins and destinations of these materials. The EPA calls on all enterprises generating and using such materials to ensure they follow regulations by appropriately using these materials and reporting all use, reuse and generation of these materials in order to avoid penalties. If an industry experiences problems reporting online, they may call the EPA's toll-free number (0800-059-777) to speak with personnel.

Recycling

Government Offices and Schools Reduce Paper Cup Use

The EPA launched the "Government Office and School Paper Cup Reduction Program" on 1 July 2007. Conventional cups will be replaced by flat paper cups only one sixth the mass. This measure is hoped to steer citizens toward voluntary reduction of resource use.

Next time you run an errand at a government office you may notice that staff or volunteers are no longer treating guests to water in a paper cup. It's not that service quality is in decline, but rather a more environmentally friendly custom has been adopted. So what is one to do when thirsty? Of course public offices still provide water dispensing machines as well as paper cups, but the new cups are flat and one-sixth the mass of conventional paper cups. People are especially encouraged to bring their own cups as the best way of reducing waste at its source.

Due to the convenience of using paper cups, people have gotten used to using paper cups only once and

throwing them away, or even using two cups to avoid getting scalded by hot water. This practice results in excessive use of paper cups. Continually on the lookout to make source reductions of throwaway items, the EPA has found paper cups an appropriate target, with a priority on government offices and schools from 1 July 2007. Government agency service centers and household registration offices traditionally offer everyone a courtesy cup of water while waiting for service. Not everyone is necessarily thirsty at such times, and this results in waste. The current measure hopes to change this custom and let those who are thirsty help themselves to water. Government offices

and schools are prioritized in the first stage of this measure, which will gradually be promoted in the private sector as well.

This waste reduction initiative is a result of numerous meetings between the EPA and related agencies. Varying demands for paper cups among each agency make it hard to set a definitive limit on paper cup usage. Therefore, this program adopts the same strategy as previous programs to increase government office green procurement and environmentally friendly behaviour. The program provides administrative guidance allowing each office to consider its own needs, adopting flexible complementary measures to promote paper cup reduction.

Reduction measures in the EPA's "Government Agency and School Paper Cup Reduction Program" entail the two strategies of restricting usage at certain premises and setting reduction goals. It is stipulated that from 1 July 2007 public offices and schools shall not provide paper cups, one-use plastic cups or containerized water during internal meetings, in areas open to the public, or in premises for public services. Additionally, from 1 July 2008, this measure will be extended to personnel training institutes (including contracted training organizations) and meetings with under 40 participants. When it is deemed necessary to provide drinking water, these premises may only use flat paper cups one-sixth to one-seventh the weight of paper cups. As for reduction goals, the amount of paper cups used in 2006 is set as a baseline; targeted entities are expected to use 50% that amount by 2008 and 25% that amount by 2009.

The EPA indicates that after implementation this program will effectively curtail the usage of at least 200 tonnes of paper cups in three years. As sanitation requirements stipulate that only brand new paper cups may be used to serve drinking water, the amount of paper cups reduced through this program is equivalent to saving 4,000 trees eight meters high and 16 cm in diameter, as well as reducing approximately 500 tonnes of CO₂ emissions totally. The program also aims to induce changes in people's daily habits by getting them to reduce the use of paper cups and carry a reusable cup with them wherever they go. The ultimate aim is to convey the importance of respecting and protecting resources.



- ▶ *For reducing waste, conventional cups are replaced by flat paper cups only one sixth the mass.*

Noise Control

New Maps Let You "See the Noise"

Believe it or not, sound can not only be heard but also seen! The EPA has introduced urban noise mapping technology from the European Union to aid in noise control. Preliminary maps have been drawn for Taipei City and will gradually expand to include densely populated areas of each county and city.

Taiwan is following the EU's example of drafting local noise maps in urban areas. The EPA explains that in introducing noise mapping experience from nations and cities in the EU, it first evaluated the feasibility and effectiveness of regional urban noise mapmaking in Taiwan. The preliminary phase drew up boundaries for three districts of Taipei City (Zhongshan, Songshan and Neihu) covering a total of 25 square kilometers. Noise volume distribution results help estimate and evaluate the impacts of external noise sources, and are very helpful for noise

control and improvement work.

The EPA indicates that it will continue to expand the boundaries of this initial map throughout this year (2007). After the technology matures, the EPA will assist each county and city environmental protection bureau (EPB) with making noise maps for densely populated areas and applying their information to assist in promptly handling sudden noise outbursts and effectively ameliorating noise problems.

The 1996 Green Paper issued by the European Commission showed that 20% of the EU population

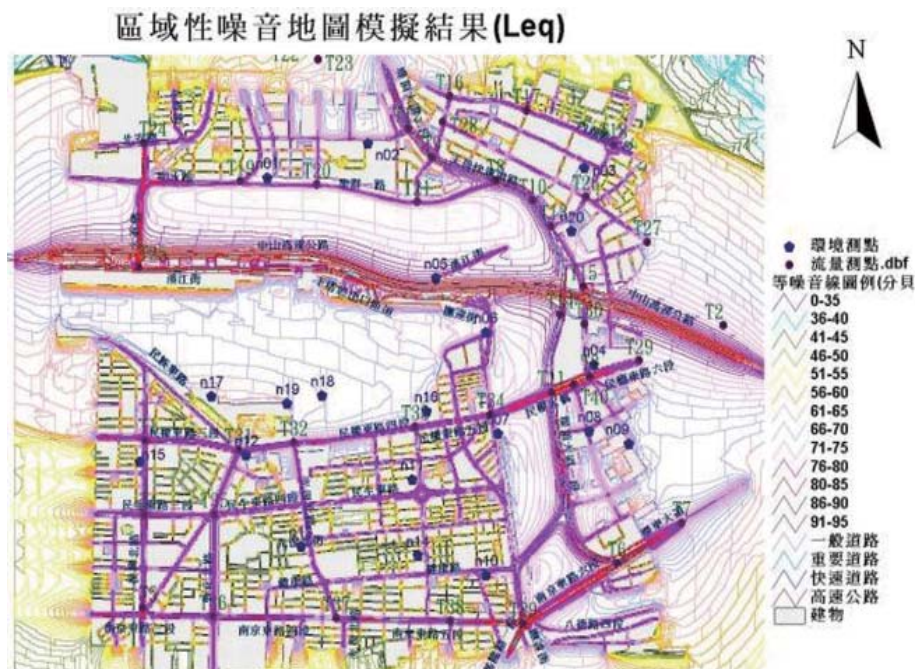
has been seriously impacted by noise. Scientists and public health experts believe that noise levels have already reached intolerable levels and recommend noise mapping to help control the situation. Therefore in July 2002, the EU mandated the Directive on Environmental Noise, which stipulates standards for each member state to follow in drawing up urban noise maps. Member states are still in the process of developing maps. Governments in Paris, Madrid, and London are investing money toward surveying noise sources and drawing up noise maps. The maps are posted online for all to view as a reference to help understand the environmental quality of residential areas.

Based on statistics, public nuisance complaints in recent years have predominantly concerned noise pollution, accounting for 31% of all public nuisance complaints in 2006. In order to gain firm control over changes in volume of noise pollution sources, and to prevent sudden outbursts of noise, the EPA has drawn on the EU nation and city noise mapping experience in completing a localized version of a regional urban noise mapping system. A pilot mapping project has been completed for an area of Taipei City delineated by Nanjing E. Rd on the south, Dazhi St. and Wende Rd. on the north, Fuxing N. Rd. on the west, and Tiding Rd. on the east.

In addition to using simulation software to draft preliminary noise maps, the system also integrates GIS data analysis

and complements measurement results to calibrate and verify predominant road and traffic noise sources for a given locality. The noise range for traffic noise at main roads is set at 71-85 decibels (depicted by purple and red). Building noise between streets ranges from 46-60 decibels (yellow and green). In general, the louder the noise, the darker the color. Noise volumes are thus easily determined at a glance based on color (see illustration).

The EPA aims to ensure that Taiwan's noise control technology keeps up with international trends. In the future, people can refer to noise maps available for viewing on the Internet to check on the noise conditions in residential areas. Inspectors can also use this system to strengthen enforcement of sudden noise sources, which will help maintain a peaceful environment and reduce the number of noise complaints.



Regional urban noise map

Water Quality

Environmental and Judicial Agencies Cooperate on Yanshui River Investigation

Remediation of the gravely polluted Yanshui River has required subsidies to implement effluent discharge improvement measures and conduct intensive special case investigations. On 12 June 2007, the EPA coordinated local district prosecutor offices, air logistics team, the Environmental Police Force and local Environmental Protection Bureaus to jointly conduct an expanded round of special case investigations.

The Yanshui River is 41.3 km long and flows through four townships in Tainan County before reaching Annan District of Tainan City. The Yanshui

is one of Taiwan's most seriously polluted rivers. Water quality data from monitoring stations show that the entire river is seriously polluted, with the main

pollution sources being residential wastewater, industrial wastewater, and livestock effluent. Downstream areas and the adjoining Chianan Canal (嘉南大圳) are also subject to large amounts of heavy metal pollution generated by electroplating and metal finishing industries.

The EPA's southern branch of the Bureau of Environmental Inspection states that the EPA has subsidized Tainan County and Tainan City governments a total of NT\$186.5 million since 2002 to improve pollution along the Yanshui. Discharge improvement measures have been completed at Anshun facilities, and special case investigation plans have been formulated for the Yanshui River, the Chianan Canal, and the Tsaitou Harbor Stream (柴頭港溪). From 2006 to May 2007, already 707 factory inspections were conducted along the Chianan Canal (Tainan City). A total of 98 environmental violations were discovered. Six factories were ordered to halt operations, and four factories are undergoing prosecution. The investigation team has forged a close alliance with

local volunteer river patrol teams to continue the fight against pollution.

On 12 June 2007, the investigation team coordinated with the Tainan District Prosecutors Office, the third unit of the National Airborne Service Corps (Ministry of the Interior), the Environmental Police Force's third patrol, and the Tainan County and Tainan City Environmental Protection Bureaus (EPB) to jointly investigate Yanshui River pollution sources on land and in the air. Due to unfavorable weather conditions, the airborne investigation will be conducted at a later date. In addressing the challenge posed by factories that secretly discharge effluent during bad weather, the Tainan District Prosecutors Office mobilized three inspectors; four environmental police officers, and 33 inspectors in 9 teams to conduct a joint investigation on land. They inspected 22 cases, and prosecuted 8 cases (including four water pollution cases and four waste pollution cases). One company was prosecuted for violation of Article 38 of the Water Pollution Control Act.

Toxic Substance Management

Taiwan Phasing Out HCFCs and Methyl Bromide

The EPA has issued the Montreal Protocol Regulated Chemical Substances Management Regulations to build the legal basis for control of related chemical substances. Moreover, revisions have been made to the HCFC Consumption Management Regulations to effectively manage the flow of ozone depleting substances.

For many years, Taiwan actions have fully adhered to regulations in the Montreal Protocol. Taiwan is keeping in step with developed countries in controlling and sharply reducing the production and consumption of ozone depleting substances (ODS). According to the Montreal Protocol control timeline, regulated chemical substances other than HCFCs and methyl bromide are still conditionally allowed for manufacture, export and import. Apart from drafting separate regulations for these two substance -- HCFC Consumption Management Regulations (氟氯烴消費量管理辦法) and Methyl Bromide Management Regulations (溴化甲烷管理辦法) -- Taiwan has already banned production and import of CFCs, halons, CCl₄, trichloroethane, and other Montreal Protocol regulated substances.

To ensure that Taiwan stick to the Montreal Protocol in regulating chemical substances already banned from production and import, the EPA has integrated former regulations and has added regulations on the sale, use and recycling of regulated substances in domestic storage through the promulgation of the

Montreal Protocol Regulated Chemical Substances Management Regulations (蒙特婁議定書列管化學物質管理辦法).

After Taiwan promulgated the HCFC Consumption Management Regulations in 2003, a total quantity control allocation system was adopted to gradually curtail HCFC consumption to 65% the baseline level by 2004. To reach the 2010 consumption reduction target of 35% the baseline level, this round of revisions has banned the use of PU foam in low temperature insulation of domestic refrigerators and HCFC-141b in the manufacture of electronic IT products, effective from 1 January 2008.

The EPA states that most domestic household electronics manufacturers have already actively complied with regulations in advance by replacing the production of HCFC-141b with alkane foam substitute materials before 2007. Keeping up with the convention's future management trends, this revision has added regulations on recycling and reuse operations as well as tracing the flow of related sales and trade. HCFC suppliers are required to provide a

list of purchasers, and vendors and recyclers of HCFC refrigerants must keep sales and recycling records to ensure effective and active management.

Faced with incremental reduction targets to phase out HCFCs to 35% baseline levels by 2010, 10% by 2015, 0.5% by 2020, and zero consumption by 2030, the EPA is taking steps to reevaluate and create a schedule

for banning HCFC production, as well as continually steering industry toward substitute technology and materials. By minimizing impacts on industry, the EPA hopes to achieve ODS reduction targets, establish total lifecycle control mechanisms, and encourage domestic industries to accelerate technology upgrades and keep up with global environmental trends.

Environmental Information

Environmental Management System Integrates Air, Water, Waste, Toxics

The EPA's air, water, waste and toxic environmental management system (EMS) will be integrated from 1 August 2007. Enterprises can confirm permit baseline data through a single portal website and handle all sorts of permit transfers and applications for permits.

The EPA's website has set up individual permit application control systems for the fields of air, water, waste, and toxics. Oftentimes companies must enter the same information for different control systems, even if some permit control data overlaps (such as company name, address, responsible persons). This is not only a waste of manpower but also is likely to cause inconsistencies between different control systems as data is entered at different times. Also, without links established between each control system, there is less ability to interlink and contrast data.

The new air, water, waste, and toxics environmental management system (EMS) can solve these problems. The EPA has already completed checking each category of permit data in this system, which is slated

for launching on 1 August 2007. Enterprises can use this integrated air, water, waste, and toxics EMS over the Internet to confirm permit baseline data and handle changing of permits and permit applications. This will greatly shorten the time required for enterprises to fill out forms.

The newly integrated data management system will allow companies to check the promptness and accuracy of air, water, waste, and toxic pollutant permit application data and baseline data. This can help when undertaking whole-factory pollution source flow management. EMS will also spare enterprises the hassle of repeatedly entering the same air, water, waste and toxic pollution data when applying for permit applications, changing operations, or relocating. Environmental protection agencies can also use

this system to inquire about air, water, waste and toxic pollutant permit application data and baseline data. This can be used to facilitate cross-checking during inspecting and control through interlinked charts on air, water, waste, and toxic pollution. This system effectively shows whether generated volumes and flow of pollutants including dust, ash, waste liquid, and sludge collected and generated by air pollution control equipment and water pollution control facilities are reasonable and legal. EMS thus enhances the efficiency of pollution control.



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Minister Dang Chairs Environmental NGO Forum

The EPA held the Environmental NGO Forum on 11 June 2007 to strengthen two-way communication between the government and civil groups. EPA Minister Winston Dang personally presided over the forum and welcomed the participation of all environmental groups.

In recent years, Taiwan's environmental NGOs have developed into professional and diverse organizations. They play an important role by participating in environmental actions and issues. These civil groups have achieved substantial results in terms of monitoring environmental legislation and promoting environmental education.

The EPA indicates that Taiwan's environmental groups, like other organizations, are classified as either juridical persons or juridical associations. Currently, the EPA has approved of the establishment of 34 environmental juridical persons. The Ministry of the Interior is superintendent over 107 environmental juridical associations. In addition to these national civil groups, there are also many local civil groups.

During the forum, Minister Dang indicated that the EPA has always regarded civil groups as partners in environmental protection, and strives to leverage their ability to mobilize and influence society toward protecting and improving the environment. When setting various policies and regulations, the EPA tries to include views from all circles, especially environmental groups, in hopes that policies are

soundly promoted and regulations are flawless.

Minister Dang indicates that a necessary future trend will be for all people to participate in environmental protection. The EPA has always worked hard on inducing the active participation of environmental groups, building partnerships with society, and maintaining good communications. In hopes of gaining the help of environmental NGOs in promoting various environmental protection work, the EPA will strengthen interaction and exchange with environmental groups. Working together to advance the field of environmental protection will create a healthier, safer and more peaceful living environment in the quest for national sustainable development.

During this year's forum, participating environmental NGOs proposed many constructive suggestions. Minister Dang led each department head in listening, understanding, and providing a timely response to promote experience exchange. The EPA indicated that the valuable insights and experience provided by environmental groups during this forum will greatly help the EPA in administering policy.

Air Quality

PM_{2.5} Air Quality Forecasting to Commence

Following the US' lead, Taiwan will soon adjust the existing air quality forecasting system and add fine particulate matter to air quality forecasts. This will enhance early warning mechanisms and capabilities for the sake of people sensitive to air quality.

Working to protect the health of those particularly sensitive to air pollutants, in August 2005, the EPA installed 76 automatic air quality monitoring units to monitor the concentration of fine particulate matter (PM_{2.5}) in the atmosphere. Deliberation is still underway on how to include PM_{2.5} into the existing air pollutant standards index (PSI). Related experts were invited to discuss, and a decision was made to refer to the World Health Organization's (WHO) Global Air Quality Guideline and the experience of the US' Air Quality Index (AQI) by adding monitoring and early warning values for PM_{2.5} every 24 hours and ozone every 8 hours. The existing air quality forecasting system will be adjusted to enhance early warning

mechanisms for people sensitive to air pollution.

The EPA indicates that as PM_{2.5} is much smaller than PM₁₀, or about one twenty-eighth the diameter of a human hair, it has more noticeable effects on human health, and poses a greater health risk especially to the elderly, children or those sensitive to poor air quality. Although currently only the US has included PM_{2.5} in its air quality index, the EPA has successively added PM_{2.5} automatic monitoring instruments to its air quality monitoring stations to keep a tighter command over the status of PM_{2.5} pollution in Taiwan in the interest of protecting human health. This data can also provide reference data for researching, reviewing and strengthening existing air pollution

control measures.

Based on the WHO's Global Air Quality Guidelines issued in October 2006, each nation can set their own PM_{2.5} air quality index in stages based on local social, economic, and environmental conditions, for example, using 24-hour average values for PM_{2.5}. The guidelines recommend standards be set in four stages at 75, 50, 37.5 and 25µg/m³, respectively.

After engaging in numerous discussions with related experts and referring to the WHO's reports as well as monitoring data over the past year, the EPA has added PM_{2.5} to the monitoring early warning levels under the precondition that the existing PSI forecasting system does not change. The system

also adopts the WHO's recommended limit of 65µg/m³ as the threshold for announcing early warnings, as well as O₃-8h at 80ppb. After the first year, the EPA will continue to review this system and make further adjustments to gradually make it stricter.

The EPA indicates that as air quality PM_{2.5} concentration reaches the early warning point, those with respiratory ailments may exhibit greater difficulty breathing and the dangers to the elderly with heart or lung conditions may be exacerbated. The EPA recommends that when PM_{2.5} is forecasted to exceed air quality early warning levels, those with breathing sensitivities, the elderly, and people with heart or lung conditions should avoid going outdoors.

Water Quality

Green Island Water Quality Improvement Project Completed

The Green Island reservoir faces problems with eutrophication every summer. Consequently, the EPA and Taiwan Water Corporation have invested funds toward a water source quality improvement project to provide safe drinking water to residents and tourists on Green Island.

Green Island is currently a top tourist destination for domestic travelers in Taiwan. Summer is the high season for tourism on Green Island with nearly 10,000 visitors per day. In order to improve the quality of drinking water for tourists as well as local residents, the EPA has coordinated efforts with the Taiwan Water Corporation in investing NT\$7.67 million for an improvement project on Green Island's Chou-Chin Reservoir and other water sources. This has helped to effectively reduce signs of eutrophication and organic content in the water, providing safer drinking water for visitors and residents alike.

In the past, the Chou-Chin Reservoir experienced eutrophication in the summer, and decaying wood and plant matter in the winter has led to overall high organic carbon levels. Adding chlorine to disinfect the water results in relatively high ratios of carcinogenic trihalomethanes, which pose a threat to the health of travelers and residents.

Under the coordination of the EPA, the Taiwan Water Corporation's 10th Branch began implementing a water quality improvement project in 2006. The project was completed at the beginning of 2007, with the main aspects of the project including: a specialized dock for scooping up decayed plant matter from the reservoir, stratified water intake, reinforced concrete, a computerized dosage control system, automatic water quality monitors and CCTV monitors. The total price tag for the project was NT\$7.67 million.

The EPA states that regular water quality monitoring plans ensure timely detection of any irregularities in water quality. This in turn allows immediate oversight of Taiwan Water Corporation to see that improvements are made to safeguard public drinking water.

The EPA points out the location of Green Island off the coast of Taitung in the Pacific Ocean makes transportation difficult. The EPA has helped carry out some of the more difficult aspects of drinking water quality standard testing for Green Island, thus ensuring safe local drinking water.

News Briefs

Minister Dang Strives for a "Clean Taiwan" within Three Years

On 6 July 2007, the EPA invited 25 county and municipality department personnel to an evaluation meeting on the "2006 Mobilization of the Citizenry to Cleanup Residential Areas" project. During the meeting, Minister Dang stated that in the next three years from 2007 to 2009, the "Mobilization of the Citizenry to Cleanup Residential Areas" project will continue building the capacity of each level of government to maintain environmental sanitation. Minister Dang said that the objective of the "Mobilization of the Citizenry to Cleanup Residential Areas" project for the first year, initiated in August 2006, was to strengthen cross-ministerial cooperation in cleaning up the environment. All agencies under the Executive Yuan were mobilized to clean up the environment within 50 meters of their

building. Citizens were also mobilized to jointly participate in cleaning up their neighborhoods. This year's focus is to encourage civil groups to adopt beaches, vacant land, and unkempt areas as well as strengthen inspection and enforcement of illegal postings on public announcement boards.

Air Pollution Fee Collection Regulations under Revision

On 8 June 2007, the EPA issued a preannouncement of draft revisions to air pollution fee regulations. Revisions were made to the reporting of inspection work, including the following: 1) the collection of petroleum coke air pollution fees will be based on actual pollutant emission volume rather than sales volume; 2) the method for calculating air pollution fee of combusted mixed fuel is stipulated; 3) gas testing should use automatic continuous testing methods; 4) the air pollution fee calculation method is stipulated for public and private premises whose reported data is lacking or differs greatly with random test results; and 5) reporting frequency for public and private premises with relatively lower emissions has been adjusted from quarterly to annually (estimated to benefit about 3,946 companies). Details of this draft revision are posted online at www.epa.gov.tw/epalaw.

National Greenhouse Gas Registry Launched

The EPA has established the "National Greenhouse Gas Registry" (<http://map.cy1000.com.tw/GHG/>) this July (2007) to integrate industry emissions, manage Taiwan's greenhouse gas emissions, and allow businesses to report their emissions online. The platform allows businesses to upload greenhouse gas inventory data, and

can serve as a portal for reporting voluntary reduction plans. In the future, industries can use this platform to understand the status of Taiwan's greenhouse gas emissions as well as reduction results.

Dengue OUT, Clean Neighborhoods IN

To prevent the possibility of an early outbreak of dengue this year, the EPA has for the first time expanded dengue control initiatives to include Chiayi County (and City), Tainan County (and City), Kaohsiung County (and City), and Pingtung County environmental protection bureaus as well as the Bureau of Environmental Inspection headquarters and central and southern branches. The EPA explained that frequent downpours in southern Taiwan due to southwesterly winds are leaving behind many pools of standing water for mosquitoes to breed in. Therefore, 15 June 2007 was chosen as the date to launch the project "Dengue OUT, Clean Neighborhoods IN." Minister Dang presided over the launching ceremony that day, calling on all to integrate local resources and work together toward eradicating dengue.

Citizen Participation in Water Quality Monitoring Activities

This year's World Water Monitoring Day activities have commenced. This year (2007), eight water quality monitoring team training activities were held to achieve environmental goals to protect water resources and increase citizens' understanding of the state of environmental water quality through actual participation in water quality monitoring work. All are invited to join with citizens of nations worldwide to test environmental water quality during World Water Quality Monitoring Month

(18 September to 18 October). This year, apart from inviting citizens to participate in water quality monitoring, five diverse competitions will be held involving teacher's lesson plans in water quality monitoring, poster design for World Water Quality Monitoring Day activities, website design, essays on participation in water quality monitoring day activities, and blog design. The 300 water quality testing kits required for the activity will be provided free of charge. Details can be found online at <http://www.epa.gov.tw/wwmd>.

"Recycling Fund Decade of Achievements" Activities Launched

To let the frontline workers understand Taiwan's achievements in the past decade of resource recycling, the EPA held the "Exchange Forum on the Recycling, Treatment and Reuse of Mandatory Recyclables" in Taoyuan County and Kaohsiung County. Nearly 300 people participated, including township and city sanitation crews, communities, schools, civil public welfare groups and environmental agencies. The forums opened discussion on the technology and status of recycling, treatment and reuse of mandatory recyclables. Domestic specialists and scholars were invited to lecture, and onsite visits to recycling and treatment facilities were arranged to observe procedures and join in DIY recycling activities. This deepened the impression on participants. The EPA emphasized that discussion, education and information exchange on related issues during these two forums allowed those engaged in recycling work to better understand the channels and technology involved in reusing resources after collection.

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