



Recycling

Recycling and Reuse—Building an Ecologically Sustainable Society

Keeping pace with economic development, the amount of waste generated in Taiwan has grown explosively. To comprehensively resolve the immense waste problem facing the island, the EPA has recently implemented a number of waste reduction and recycling/reuse policies. The intent of these policies is to spur participation by all citizens, and, starting with the basic issue of waste reduction, build the foundation for an ecologically sustainable society.

A peak of 8.88 million metric tons of garbage was disposed of in Taiwan during the year 1997. This quantity began dropping after that year; only approximately 7.25 million metric tons were disposed of in 2001, while the amount of recycled resources rose from 480,

000 metric tons in 1997 to 1.05 million metric tons in 2001. Although these overall trends show that waste reduction and recycling are beginning to achieve meaningful results, small and populous Taiwan cannot construct an unlimited number of landfills and incinerators to dispose of the waste it is constantly producing. “Because we can’t continue to depend on more and more incinerators and landfills to dispose of our waste, garbage reduction and recycling will unquestionably be among the EPA’s future priorities.” Thus EPA Administrator Hau Lung bin laid out the EPA’s policy principles concerning Taiwan’s waste problem.

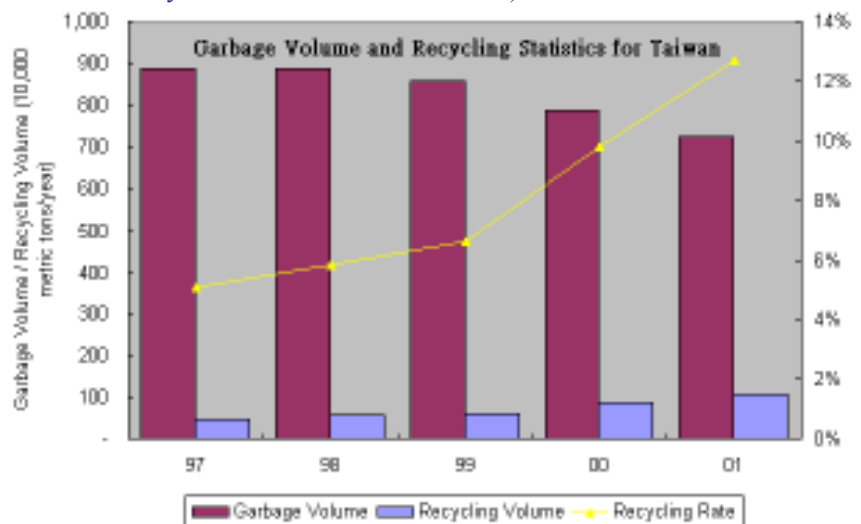
Statistics indicate that a total of 1.05 million metric tons of useable resources were recovered from household waste in 2001. The amount of resources recovered from household waste is expected to rise steadily as the EPA contin-

ues to introduce new recycling measures. In addition, more than 11 million metric tons of resources are recovered from industrial waste every year. Thus, close to 12 million metric tons of resources are recovered from waste of all types every year.

The EPA is currently working in four directions in order to speed the promotion of waste reduction and recycling and reuse. These are the implementation of the *Environmental Industry Zone Development Plan* (環保科技園區推動計畫), increasing the effectiveness of recycling by local sanitation teams, instituting the *Plastic Shopping Bag and Plastic Disposable Dishes Use Restriction Policy* (購物用塑膠袋及塑膠類免洗餐具限制使用措施), and accelerating the implementation of the *Resource Recycling and Reuse Act* (資源回收再利用法).

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Waste is just resources that have been put in the wrong place.

Establishing Ecological Cities and Villages

To promote the development of an ecologically sustainable domestic industry, the EPA plans to establish “environmental industry zones,” which will foster the emergence of “eco-towns.” To promote the development of the environmental protection industry and resolve Taiwan’s environmental protection problems, the EPA is prepared to commit a budget of NT\$3.5 billion for the full-scale implementation of the *Environmental Industry Zone Development Plan* (see EPM Vol. V, Issue 3). It is projected that 150 firms will have set up operations in these environmental industry zones within five years, stimulating NT\$12 billion worth of private investment, creating NT\$22.5 billion in annual output value, and recycling and reusing 1 million metric tons of waste each year.

The EPA will provide land lease subsidies, tax incentives, and production and R&D subsidies to the recycling firms that move into these zones in the future. By supporting the development of the domestic environmental protection industry and raising the level of domestic waste disposal operations, these zones will reduce waste production and increase the reuse of valuable resources, which will lessen the social cost of pollu-

tion and enhance Taiwan’s overall environmental quality.

Instituting a National Waste Separation System

According to statistics, of the 1.05 million metric tons of resources recycled in 2001, approximately 580,000 metric tons were recycled by local government sanitation teams. This plainly reveals the importance of sanitation teams in recycling work. The EPA has therefore drawn up an assistance plan to help local sanitation teams purchase recycling vehicles, which will enable them to achieve the goal of twice-weekly recycling pick-ups. This, in turn, will increase the public’s willingness to participate in recycling.

In accordance with Article 5 of the *Waste Disposal Act* (廢棄物清理法), the EPA announced the waste items that must be recycled on May 6 of this year. Local environmental protection bureaus or town/township public offices must separate and recycle these items in the future, and may not dispose of them together with other municipal garbage. The 12 regulated items are paper (including Tetra-Pac and paper containers), iron, aluminum, glass, plastic (including PET, PE, PVC, PP and PS except for that used in plastic bags), dry cell batteries, motor vehicles (including automobiles and

motorcycles), tires, lead storage batteries, electrical goods (television sets, washing machines, refrigerators, air-conditioners and heaters), information goods (computers and peripherals), and fluorescent lamps (straight-tube type). Furthermore, the EPA is also assisting local governments draw up their own *Regulations for the Separation, Recycling and Clearance of General Municipal Solid Waste* (一般廢棄物分類回收及清除辦法), which will further improve recycling results.

The First Step to a Clean Nation

“We have chosen to place restrictions on the use of plastic bags and plastic disposable dishes as the first step because we know from public opinion surveys that the people of Taiwan are aware that plastic bags and plastic disposable dishes are used wastefully, and are a gross form of pollution.” Administrator Hau added that, in accordance with Article 21 of the *Waste Disposal Act*, the EPA formally announced on this year’s Earth Day that the first stage of restrictions on plastic shopping bags and plastic disposable dishes would go into effect on July 1, 2002. (see EPM Vol. V, Issue 4)

Ilan County and Kaohsiung City have already instituted measures to control plastic bags and disposable dishes. In Ilan County, government organizations, schools, the restaurant industry, shopping centers, farms, hotels and temples have been forbidden to use disposable PS and plastic disposable dishes since January 2001. In the case of Kaohsiung, restrictions were imposed on the use of plastic shopping bags and disposable dishes by government organizations since January 2002. Beginning on April 1, these restrictions were extended to department stores, mega stores, chain super-

markets and chain convenience stores. In compliance with these restrictions, some merchants have begun providing free paper bags, encouraging the public to buy environmentally-friendly bags or providing plastic bags only for an extra fee.

Executive Yuan Premier Yu Shyi-kun expressed his support for the EPA's *Plastic Shopping Bag and Plastic Disposable Dishes Use Restriction Policy* at the Executive Yuan meeting held on May 29. Premier Yu feels that this well-thought-out policy can stimulate society's environmental awareness, and should be implemented vigorously. Yu called on central and local government agencies to set an example for the people by throwing their full weight behind the EPA and taking part in the promotion of this policy.

Because of the scanty rainfall so far this year, some areas in Taiwan are already experiencing water shortages and have had to institute rationing on a district-by-district basis. While the EPA hopes that the public and merchants will employ reusable dishes in line with its policy of restricting the use of plastic disposable dishes, it also is aware that water rationing measures are making the public question whether there will be enough water to wash dishes. In consideration of this issue, the EPA has decided to delay implementation of the first stage of disposable dishes restrictions three months, until October 1, 2002. On the other hand, the first stage of restrictions on plastic shopping bags will still take effect on July 1, and the second stage of restrictions will similarly take effect on the originally scheduled date of January 1, 2003.

Strengthening the Legal Basis for Recycling

The *Waste Disposal Act* concerns end-of-pipe controls, and does not

provide holistic criteria coverage the entire product life cycle. In contrast, the EPA-written draft of the *Resource Recycling and Reuse Act*, which the Legislative Yuan passed on June 4, builds on existing end-of-pipe controls by considering the feasibility of recycling and reuse throughout all stages of the product life cycle, including design, manufacturing, sales, use, and disposal.

In accordance with the requirements of the new act, in the future the EPA will establish a Renewable Resource Recycling and Reuse Promotion Committee (再生資源回收再利用促進委員會) to bear responsibility for deliberating major policies concerning recycling. The new act also specifies that the competent authorities in charge of target industries must assist enterprises to recycle and reuse renewable resources. In light of specific industries' levels of development, the authorities shall announce which products or construction projects must recycle and reuse renewable resources.

In addition, the new act authorizes the EPA to prohibit the use of certain products, packaging and containers in specified places. This provides a clear-cut legal basis for the EPA's implementation of the *Plastic Shopping Bag and Plastic Disposable Dishes Use Restriction Policy*. And to avoid unnecessary packaging on products, reduce the consumption of resources and limit the production of waste, in the future the EPA may, in consultation with the competent central authorities in charge of the industry in question, place restrictions on specified product packaging volume ratios, number of packaging layers, and materials used and their quantities in connection with certain announced industries.

The new act also stipulates that government agencies should grant priority to the procurement of environmentally-friendly Green Mark

products, products manufactured from recycled materials, or products made from raw materials including at least a certain percentage of renewable resources. The new act thus provides a firm legal basis for the government's institution of "green purchasing."

Moreover, the new act further authorizes the EPA or competent authorities in charge of the industries in question to plan and establish environmental industry zones for the recycling and reuse of renewable resources. This provision can resolve the land needs of recycling businesses, while also offering preferential measures such as tax incentives to renewable resource industries, thereby encouraging and supporting the development of recycling-related industries in Taiwan.

2001 Local Environmental Protection Bureau Evaluation Results Announced

To rate the effectiveness of local environmental authorities, the EPA assessed the environmental protection bureaus of Taiwan's 23 cities and counties in three groups on the basis of the three factors of "administrative and organizational system," "pollution burden" and "enforcement manpower and degree of difficulties faced." In the 2001 assessment results recently announced by the EPA, Taipei City, Kaohsiung City, Taipei County, Taichung County, Tainan County and Ilan County were granted a superior rating.

Legislative Yuan Says Yes to Revised Public Dispute Settlement Act

The Legislative Yuan passed the partially revised *Public Dispute Settlement Act* (公害糾紛處理法) on June 7. The revised act relaxes the required qualifications of the chairpersons of public dispute adjudication committees, and allows lawyers, judges, public prosecutors and other legal or academic professionals to hold this post. Administrator Hau believes that the previous act imposes excessively strict requirements on chairpersons, and hopes that the easing of qualifications will insure that suitable chairpersons can be readily hired.

General Policy

Hau Advances Environmental Protection in Southern Taiwan

EPA Administrator Hau was recently invited to give a lecture in Kaohsiung concerning southern Taiwan's long-term environmental problems. Hau declared that the EPA's environmental protection policies have consistently given southern Taiwan precedence over northern Taiwan since he took the helm. The EPA is working vigorously to clean up southern Taiwan's environmental problems and protect the rights and interest of local citizens.

For instance, heavy metal pollution along the Erhjen River had been a matter of widespread public concern for more than a decade since the "Green Oyster Incident" (綠牡蠣事件), in which farmed oysters turned green due to copper pollution. But in spite of the severity of this problem, for more than a decade the EPA had found no way to comprehensively resolve the pollution problem. Finally, last year the EPA compelled the removal of more than 50 illegal smelters along the banks of this river. Although this action set off a round of complaints, lobbying and resistance, Administrator Hau stubbornly carried through the removal work to the end, and afterwards began implementing landscaping and pollution remediation work along the riverbank. Nowadays the Erhjen River shows a fresh new face to the world. (see EPM Vol. IV, Issue 1)

steel, petrochemical and other heavy industries explains why its air quality is the worst in the nation. In spite of the EPA's ongoing industry assistance and inspections, which has helped firms improve their air pollution emissions and reduced the 2001 poor air quality rate for the Kaohsiung-Pingtung area by 23% over 2000, the area's poor air quality rate is still at least twice as high as the national average. The EPA therefore plans to institute total emission controls (TQC) in the Kaohsiung-Pingtung area starting in 2003 (see EPM Vol. IV, Issue 8), and hopes that a tradable emissions system and other economic incentives will spur industry to employ best available control technology (BACT). The EPA also wishes to encourage firms to change their business philosophy and consider environmental protection costs when they assess their business performance, adopting the proactive attitude of sustainable management.

Hau has consistently made pollution prevention in southern Taiwan the main theme of his environmental protection policy.

EPA Administrator Hau Lung-bin gave a lecture entitled "New Challenges in Environmental Protection and Ecology" at the Kaohsiung Municipal Library on May 4. As Hau acknowledged, southern Taiwan has continuously faced many environmental and pollution problems—such as the illegal smelting industry along the Erhjen River (二仁溪) in the Tainan area and water pollution from hog raisers in water source areas—and has therefore had to deal with much more severe environmental protection issues than has had northern Taiwan. But since Hau took over as EPA administrator, he has consistently made pollution prevention in southern Taiwan the main theme of his environmental protection policy and implementation.

Among the EPA's other important accomplishments of last year was the removal and compensation of hog raisers from water source protection zones in Taiwan's five major river basins, including the severely polluted Kaoping River (高屏溪). A total of 560,000 hogs were removed from sensitive river basins nationwide, including more than 460,000 from the Kaoping River basin. The ammonium nitrogen content of Kaoping River water has fallen from 1.74 ppm in the past to 0.27 ppm recently, and the improvement in water quality is striking. In fact fish are gradually starting to reclaim this once dying river. (see EPM Vol. V, Issue 1)

Addressing southern Taiwan's air pollution problems, Administrator Hau noted that southern Taiwan's role as the cradle of the country's

Administrator Hau used this lecture to expound on his administrative philosophy and compare his policy implementation achievements with those of the year or more before he assumed his post. Hau convinced the public that he is working hard to raise Taiwan's environmental quality, and is determined to bring the full weight of public authority to bear on pollution issues.

EPA Bans Boat Paints Containing Tributyl Tin Oxide

To enhance control over environmental hormones, the EPA has formally announced that the use of paints containing tributyl tin oxide on boats less than 24 meters in length will be prohibited starting January 1, 2003. While tributyl tin oxide was already a controlled toxic substance in Taiwan, this ban displays the country's determination to comply with international controls on organic tin compounds.

Air Quality**Revised Air Pollution Control Act Simplifies Permit Procedures**

The revised *Air Pollution Control Act*, passed by the Legislative Yuan on May 21, authorizes the EPA to allow other government agencies to review and issue permits, thus shortening plant opening application procedures. In addition, the new act lays out severe penalties for firms that illegally import or export pollutants in violation of international conventions.

The EPA has recently revised the *Air Pollution Control Act* (空氣污染防制法) in order to implement resolutions adopted at the Economic Development Advisory Conference (經濟發展諮詢委員會) and implement the provisions of the *Administrative Procedures Act* (行政程序法). The revised act was passed by the Legislative Yuan on May 21. The new act adds eight articles—increasing the total number of articles from 78 to 86—and revises the content of 52 existing articles.

The revisions to the act mostly conform to the resolutions made by the Economic Development Advisory Committee. The new act authorizes the EPA to let other government agencies, such as science-based industrial park administrations, approve and issue permits for the establishment and operation of stationary pollution sources. By shortening permit application time and enabling businesses to establish new plants faster, this change should enhance corporate

competitiveness. The new act, by allowing fees to be used for air pollution health risk assessments, the promotion of clean energy, and incentives for clean energy R&D, also expands the scope of items for which air pollution fees may be used.

Among the key points of the newly-added articles are control statutes corresponding to the regulations of international conventions. For instance, in the future, persons who illegally traffic in internationally-regulated substances likely to cause air pollution (such as CFCs) may be punished with prison sentences ranging from six months to five years, and will be subject to fines of NT\$300,000~NT\$1.5 million as well. Furthermore, those who have repeatedly engaged in such acts may be punished with sentences ranging from one to seven years, and additional fines. Persons who engage in this type of smuggling are currently subject only to customs regulations, which stipulate that the smuggled goods will be confiscated and a fine of one to three times the cargo's value imposed, but these penalties have been an insufficient deterrent to such lucrative smuggling. The new act's stiff fines and threat of imprisonment should effectively curb smuggling, reinforcing the country's control efforts and polishing its international image. In addition, to strengthen control over emissions from stationary pollution sources, the new act also authorizes the EPA to require regulated stationary pollution sources to report air pollution emissions during the previous year to the local environmental protection bureau before the end of January of each year.

Among other notable aspects, the new act strengthens enforcement of the ban on illegal gasoline and diesel by expanding the targets of these regulations to include, not

just manufacturers, importers, and vendors as in the past, but also consumers. The act now provides for fines of NT\$5,000~NT\$100,000 for consumers of illegal gasoline and diesel. The criminal penalty for the sudden discharges of large quantities of air pollutants has been raised to imprisonment of between seven years and life if loss of life occurs, to imprisonment of between three years and ten years if severe injury occurs, and to imprisonment of less than five years if physical harm to the extent of illness occurs. These sentences may also be accompanied by fines of varying amounts.

When it passed the *Air Pollution Control Act*, the Legislative Yuan simultaneously passed an attached resolution requiring the EPA to submit revised articles concerning Taiwan's total quantity controls (TQC) and emission trading system within six months. This system can be implemented only after the revised articles have been reviewed and passed by the Legislative Yuan. Therefore, besides stepping up its dialog with legislators, the EPA will include the formulation of the TQC and emission trading system among its future legal revision work.

For more information, please call 02-2311-7722 ext. 2760.

Public Most Satisfied with Government Environmental Action

The most recent public opinion survey results, announced by the Executive Yuan on May 17, reveal that 69.6% of respondents, when asked about their views concerning the government's work, expressed satisfaction with the state of "implementation of environmental protection." This was a rise of 4% over the results of a similar survey last October. The item elicited the most favorable response of any on this survey, and was followed by "safeguarding national security" (65%) and "maintaining basic human rights" (64%).

Water Quality

Marine Pollution Emergency Response System Activated Due to Disabled Oil Tanker

Having suffered mechanical problems in Japanese waters on May 2, an oil tanker fully loaded with crude oil was towed into Taiwanese waters where it was preparing to drop anchor in order to undergo repairs and transfer its oil to another ship. Due to concerns that this might cause pollution, the EPA coordinated with other ministerial bodies in order to activate the Executive Yuan Major Marine Pollution Emergency Response Task Force. The task force drew up response guidelines and informed the ship that it would not be permitted to transfer its oil within Taiwan's 200-nautical mile exclusive economic zone. Following the proactive intervention of the task force, the tanker moved out of Taiwan's exclusive economic zone on May 9, and this marine pollution emergency response alert came to a successful end.

The Front Tobago, a Liberian-registered oil tanker fully laden with 249,000 metric tons of crude oil, was originally steaming towards Japan where it was to offload its contents. However, on May 2, while already in Japanese waters, the freighter lost propulsion power due to a mechanical failure. The ship's British owner dispatched a tugboat from Singapore to rescue the incapacitated tanker. Having been escorted by a Japanese patrol boat to the midline between Japan and Taiwan, the tug proceeded to carry the oil freighter south into Taiwanese waters and ultimately stopped in waters off the south of Taiwan. Noticing that it was not adhering to the principle of innocent passage, Taiwan's Coast Guard Administration began monitoring the tanker on May 8. The tug and tanker resumed in a southwestern direction, but stopped again at a spot 140 nautical miles off of Kaohsiung where they rendezvoused with another tug and an empty oil tanker sent by the disabled tanker's owner and where it was preparing to transfer its oil cargo.

As this tanker was sitting in Taiwan's 200-nautical mile exclu-

sive economic zone and was without propulsion power, there were concerns that an at-sea oil transfer could cause pollution. Therefore, on the morning of May 9, the EPA, in line with its duty of handling all pollution incidents, assembled officials from the Ministry of National Defense, Ministry of Foreign Affairs, Ministry of Transportation and Communications, Coast Guard Administration, Ministry of the Interior, and Mainland Affairs Council in order to convene a meeting of the Executive Yuan Major Marine Pollution Emergency Response Task Force (行政院重大海洋污染事件處理專案小組). The members of the task force jointly discussed possible response measures and formulated the following response guidelines.

1. In line with both the *Statute for Exclusive Economic Territorial Waters and Continental Shelf Areas of the ROC* (中華民國專屬經濟海域及大陸礁層法) and the *Marine Pollution Control Act*, the task force refused to grant approval for the transfer of oil because, as the tanker was without propulsion power

and had no emergency response plan or pollution control equipment, it was judged that there was a high risk of pollution resulting from an at-sea transfer.

2. The task force directed the Coast Guard Administration and Ministry of Transportation and Communications to maintain communications with the ship's captain and owner and to send personnel to board the ship so as to determine whether it required assistance in making repairs and how much time repairs would require. In light of humanitarian principles, the task force agreed that the government would allow the ship to remain temporarily in the spot at which it had stopped for the purpose of undergoing repairs if the personnel judged there was no risk of pollution.
3. In the instance that the tanker proceeded with its plan to transfer its oil, the task force directed the Coast Guard Administration, with the support of the Ministry of National Defense, to put an immediate halt to this action.
4. The task force directed the Ministry of Transportation and Communications to immediately notify the tanker's owner that Taiwan has legal jurisdiction over the waters in question and that, under the *Statute for Exclusive Economic Territorial Waters and Continental Shelf Areas of the ROC*, it has the right to board and inspect the ship. The ministry was also to notify the owner that Taiwan has the right to forcibly expel or arrest the ship's personnel, to confiscate the ship, its navigation instruments, equipment, and contents, and to initiate legal proceedings. In addition, the ministry was to reiterate to the

owners that they were prohibited from conducting an oil transfer in Taiwanese waters.

5. The task force stated that close attention should be paid to any changes in the weather and that appropriate response measures should be taken to deal with any changes while the tanker was still located in Taiwanese waters.
6. The task force stated that the Ministry of Foreign Affairs should be notified first if any forcible action was to be taken against the ship, and that, as the ship's owner is a British citizen, the ministry was to transfer this information to the British government.
7. With the activation of the marine pollution emergency response system, the Coast Guard Administration had already established an on-site response center in southern Taiwan. The task force directed each relevant ministerial body to immediately dispatch personnel to this center. The Ministry of National Defense also established a joint military battle command center. The task force directed all bodies to maintain close communications and provide mutual support.

Due to the government's insistence and explicit demands, the ship agreed to leave Taiwan's 200-nautical mile exclusive economic zone on the afternoon of May 9, and advanced in a southwestern direction. Continued monitoring revealed that the tanker ultimately stopped at a distance of 220 nautical miles from Kaohsiung where it proceeded to transfer its oil. This marked the successful end to this marine pollution emergency response alert.

For more information, please call 02-2311-7722 ext. 2840.

Waste Management

EPA: No Permits Issued for Waste Export to Solomon Islands

The EPA, responding to foreign wire service reports that a certain enterprise in southern Taiwan was planning to export polluted industrial sludge to the Solomon Islands, declared that Taiwan is absolutely opposed to the export of hazardous industrial waste to countries that do not possess the capacity to treat such waste and stressed that it has not granted approval for the shipment of any waste to the Solomon Islands.

Foreign wire services reported in both February and May that enterprises in Taiwan and the Solomon Islands were conspiring to export post-treatment sewage sludge and industrial waste from Taiwan to the Solomon Islands. Commenting on these reports, the EPA states that in November 2001 it had already obtained information that a certain enterprise in southern Taiwan was planning to export polluted industrial sludge labeled as humus soil to the Solomon Islands and that it had already obtained the approval of agricultural authorities in the Solomon Islands. Following a thorough investigation, it was determined that the enterprise in question was a single import-ex-

port company that was not a licensed waste handler. This investigation also discovered that the scheme was still in the planning stage and that the enterprise had not submitted any applications to the EPA nor had it exported any waste materials.

In the wake of this discovery, the EPA has dispatched personnel from the EPA's Southern Inspection Team and the Environmental Protection Police Force to keep a close eye on the actions of this enterprise. It has also called on local environmental protection agencies to increase awareness of Taiwan's management regulations regarding the export of waste and of the punishment and administrative penalties for violating these regulations. In addition, the EPA notified the Directorate General of Customs and each customs bureau to make thorough inspections of this enterprise's exports to the Solomon Islands in order to prevent any illegal behavior of this enterprise from harming the environment of the Solomon Islands and tarnishing Taiwan's international reputation.

Concerning the control of the cross-border transport of waste materials, the EPA notes that, while it is not a formal member of the Basel Convention, it does fully abide by the spirit of this international agreement in order to fulfill its international environmental protection responsibilities. Article 38 of the *Waste Disposal Act* stipulates that an application must be submitted to the EPA and a permit

Restart of Work on Keelung Incinerator

Work formally restarted on the Keelung incinerator on May 16, and the facility is expected to be completed in May 2005. When operating, the incinerator will dispose of all waste produced by Keelung's 390,000 residents. The EPA is in charge of construction of this incinerator,

which will have a daily capacity of 600 metric tons. Because the original contractor suffered financial problems, the EPA was forced to solicit bids again in November 2001. The work is now being performed jointly by the two contractors Ebara of Japan and Hsin II Engineering Co. Ltd. (信誼機器工業股份有限公司).

obtained before any industrial waste material can be exported from Taiwan. Also, since May 2000, Taiwanese law has strictly prohibited the export of household waste for overseas handling and the export of industrial waste for overseas landfill disposal or solidification treatment.

As of the present, Taiwan has not approved the export of any waste materials to the Solomon Islands. The EPA has explicitly reminded Taiwanese enterprises that they should not entrust the export of waste materials to any enterprise

that says that it can export waste to the Solomon Islands for disposal. Those enterprises involved in such behavior will not only be violating regulations, but will also be held jointly responsible for these illegal actions. The EPA has emphasized that any enterprises that are discovered by the EPA or customs to be attempting to export waste illegally to other countries will suffer the most severe punishment and will be shown absolutely no leniency.

For more information, please call 02-2311-7722 ext. 2650.

Air Quality

Regulations Drafted for Air Quality Simulation Models

The EPA has completed its draft of regulations for air quality simulation models. These regulations require operators, based on emissions volumes and types of pollutants, to conduct air quality simulations using either Gaussian dispersion, trajectory, or grid modeling when installing new stationary pollution sources or modifying existing ones. Data generated from these simulations will be used as a basis for reviewing permit applications.

Articles 6 and 8 of the *Air Pollution Control Act* require operators to conduct air quality simulations when installing new stationary pollution sources or modifying existing ones whose emissions volumes are expected to exceed specified levels and that are located in Class II or Class III air quality control regions or total quantity control (TQC) zones that meet air quality standards. These simulations will forecast the effects of air pollution emissions on these areas and neighboring areas and will be used by competent authorities as a basis for reviewing installation and operation permit applications for stationary pollution sources.

In order to implement these regulations, the EPA has drafted the *Criteria for Air Quality Simulation Models* (空氣品質模式模擬規範). This draft designates three models for predicting the dispersion of air pollution: the Gaussian dispersion model, trajectory model, and grid model. The

Activities

Administrator Hau Presides at Inaugural Ceremony for Putzu River Constructed Wetlands Project

Administrator Hau personally presided at a ceremony held on May 21 to inaugurate use of the Putzu River (朴子溪) constructed wetlands project in Chiayi County. This is the first time that natural methods have been used in Taiwan to divert river water onto riverbanks where plants and soil microbes can absorb and decompose pollutants, improving water quality. The current project can treat approximately 2,000 metric tons of wastewater daily. Administrator Hau took this occasion to declare that the government will spend another NT\$3.8 billion on the remediation of the Putzu River over the next six years.

Environmental Technology Symposium in Canada

To gain a better understanding of Canada's environmental protection industry and promote the bilateral sharing of environmental protection technology, the EPA and the Cana-

dian Trade Office in Taipei jointly held the "Post Globe 2002, Taipei" on May 26. This event, which attracted close to 100 domestic researchers, specialists, and environmental protection industry personnel, featured presentations on Canada's cutting-edge environmental technology and environmental information.

Eighth International Water Quality Management and Treatment Technology Conference

Jointly hosted by the EPA, MOEA, and COA, the "Eighth International Water Quality Management and Treatment Technology Conference" was held at National Sun Yat-sen University on May 27 and 28. Addressing the two topics of "water source protection" and "drinking water treatment technology," the event issued 25 papers. Invited specialists and scholars from Europe, the US, Japan, and Korea gave presentations, and much experience and knowledge was shared.



This is the first time constructed wetlands have been used to improve the quality of river water in Taiwan.

Air Pollution Increase Limits for Stationary Pollution Sources (Draft)

Pollutant		Class I control regions	Class II control regions and TQC zones that meet air quality standards	Class III control regions	Special Notes
PM ₁₀ (ug/m ³)	Annual average	1	0.5(Cs-Cb)	3	1. Class III control region increase limits will be applied to Class II control regions and TQC zones that meet air quality standards when the limits of these latter two are lower than the Class III control region limits. 2. The competent authority will set increase limits following case-by-case reviews for development projects that are required to complete EIA.
	Maximum daily average	3	1.0(Cs-Cb)	6	
SO ₂ (ppb)	Annual average	1	0.5(Cs-Cb)	3	
	Maximum daily average	3	1.7(Cs-Cb)	10	
	Maximum hourly average	8	4.2(Cs-Cb)	25	
NO ₂ (ppb)	Annual average	2	0.5(Cs-Cb)	5	
	Maximum hourly average	8	2.5(Cs-Cb)	25	
Ozone	To undergo case-by-case reviews by competent authorities				
Secondary aerosol	To undergo case-by-case reviews by competent authorities				
Notes:					
Cs denotes the annual average for each pollutant as stipulated in air quality standards.					
Cb denotes the background air quality value.					

conditions under which these air quality simulations must be conducted are listed below.

- Operators required to conduct simulations using either the Gaussian dispersion model, trajectory model, or grid model must simulate PM₁₀ increase rates when their annual particulate matter (PM) emissions reach 15 metric tons, must simulate SO₂ increase rates when annual SO_x emissions reach 60 metric tons, and must simulate NO₂ increase rates when annual NO_x emissions reach 40 metric tons.
- Operators required to use either the trajectory model or grid model must model ozone increase rates when combined annual NO_x and VOC emissions fall between 500 metric tons and 2000 metric tons. These operators are also required to conduct modeling of secondary aerosol increase rates when their combined annual emissions of NO_x, PM, and SO_x fall between 500 metric tons and 2000 metric tons.

- Operators required to use the grid model must simulate ozone increase rates when their combined annual NO_x and VOC emissions exceed 2000 metric tons and must model secondary aerosol increase rates when combined annual emissions of NO_x, PM, and SO_x surpass 2000 metric tons.

These operators located on Taiwan's offshore islands, including Penghu, Kinmen and Matsu, are not required under this draft to conduct air quality simulations because meteorological data for these areas is inadequate. The competent authorities will review permit applications from these operators on a case-by-case basis. However, the draft stipulates that operators in all other areas of Taiwan that meet the above conditions must conduct air quality modeling when installing new stationary pollution sources or modifying existing ones. Permits will only be issued to operators whose simulations show that the increase in pollution concentrations resulting from their facilities does not exceed air pollution increase limits.

To accompany these simulation regulations, the EPA has also formulated its draft of *Air Pollution Increase Limits* (空氣污染物增量限值) in line with regulations under Articles 6 and 8 of the *Air Pollution Control Act*. This draft stipulates that the simulated concentration of each type of pollutant must fall within maximum allowable increase limits at each receptor point within the simulation area.

For more information, please call 02-2311-7722 ext. 2799.

EPA Drafts Mid-/Long-term Gasoline and Diesel Control Standards

The EPA is currently drafting *Mid-/Long-term Gasoline and Diesel Control Standards* (中長程汽柴油管制標準), and plans to begin implementation of the "Mid-term Standards" in 2007. The standards comply with the international trend towards reducing the sulfur content of fuel and the stage 4 diesel vehicle emissions standards. The permissible sulfur content of gasoline and diesel fuel will be sharply reduced, and additional controls may be imposed on aromatic hydrocarbons and alkenes.

Air Quality

Taiwan to Continue Cutting Sulfur Levels in Industrial Fuel

Aiming to improve air quality by reducing the concentration of sulfur in the air, the EPA intends to lower the limit for the percentage of sulfur in industrial fuel used in Tainan City and Tainan County from the current 1.0% to 0.5%. Having already implemented this 0.5% limit in 11 cities and counties, the EPA will continue with its efforts to extend this limit, with the ultimate goal of limiting all of the western half of Taiwan to the use of 0.5%-sulfur industrial fuel.

In order to reduce the emission of sulfur oxide (SO_x) from stationary pollution sources and lower related particulate matter pollution, the EPA, focusing primarily on the western half of Taiwan, has continued to strengthen its limits for the percentage of sulfur in industrial fuel in recent years. On December 1, the EPA will add Tainan City and Tainan County, which are currently subject to a 1.0% sulfur limit, to the eleven cities and coun-

ties that are already using the EPA's most stringent 0.5%-sulfur industrial fuel limit. After evaluating fuel supplies following the implementation of this plan, the EPA will set a timetable for expanding this 0.5% limit to other areas. It aims to restrict the entire western half of Taiwan to the use of 0.5%-sulfur industrial fuel at the earliest possible date.

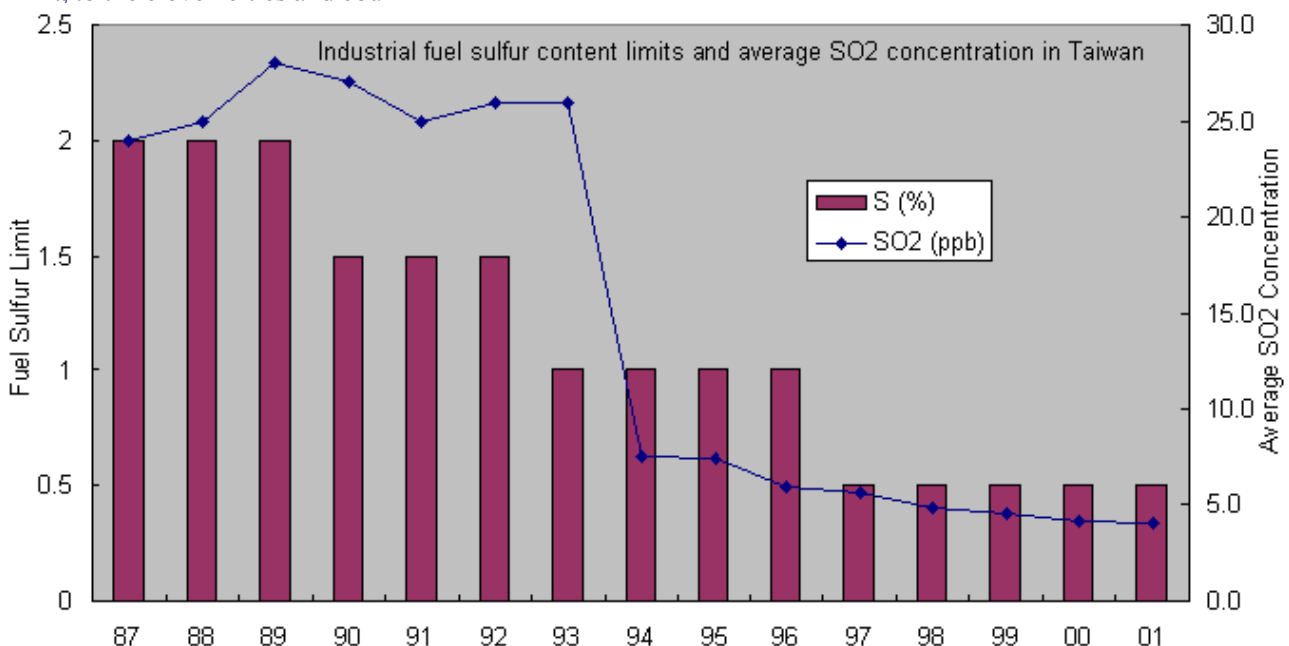
The combustion of sulfur containing fuels is the primary source of sulfur dioxide in the air. End-of-pipe controls, in which flue gas desulfurization equipment is installed on the exhaust pipes of combustion facilities in order to remove sulfur dioxide from waste gases, is one way of dealing with this pollution. However, source reduction controls, in which regulations are drawn up in order to require the use of low sulfur fuels, are a much more effective way of controlling sulfur dioxide emissions.

Taiwan began enforcing a 2.0% limit for the sulfur content of industrial fuel for all areas in 1986. The EPA further cut this limit to 1.5% in 1990, and again to 1.0% in 1993. Following in 1996, the EPA introduced its most stringent 0.5% limit in Taipei City, Taipei County, Keelung City, Taichung City, Taichung County, Kaohsiung City, and Kaohsiung County, areas which suffered from more serious

sulfur oxide pollution. From 1996 to 1999, the EPA added Taoyuan County, Pingtung County, Nantou County, and Changhua County to the areas subject to this 0.5% limit. Now, there are a total of eleven cities and counties using this limit. These areas used approximately 8.55 million kiloliters of 0.5%-sulfur industrial fuel, accounting for 70% of all the industrial fuel used in Taiwan, in 2001. The areas consuming the remaining 30% of industrial fuel still use the 1.0% limit. These areas are the targets of the EPA's future control efforts.

Data from EPA air quality monitoring stations clearly indicates that these source reduction pollution control efforts are paying off. The average concentration of sulfur dioxide (SO₂) in Taiwan's air has steadily dropped from a peak of 28 ppb in 1989, and the most significant decrease has occurred since the imposition of the nationwide 1.0% sulfur limit in 1993. Air quality monitoring figures for 2001 show that average sulfur dioxide concentrations have already fallen to 4.0 ppb, reflecting an accumulated 85.7% reduction since the 1989 peak. These source control efforts have resulted in a real and significant improvement in Taiwan's air quality.

For more information, please call 02-2311-7722 ext. 2778.



Public Sanitation

Public Invited to Join in Nationwide Spring Beach Cleanup

The EPA has been working with local environmental protection agencies in organizing beach cleanups each year since 1998. Aiming to provide pristine beaches for the enjoyment summer beachgoers, the EPA has scheduled a total of 64 beach cleanups this spring.

Along with Taiwan's rapid economic development, Taiwanese have come to demand more and more recreational options. While coastal areas with well-developed recreational facilities have become one of the best choices for Taiwanese holidaymakers, overdevelopment and overuse have created kilometers of rubbish-strewn beaches. The EPA started organizing beach cleanups all around Taiwan in 1998 in order to ensure the public has the opportunity to enjoy unspoiled beaches. This year's nationwide spring beach cleanup has already commenced in each of the nation's twenty-one coastal cities and counties. The EPA, anticipating the support of 23,000 environmental volunteers, individual citizens, members of company groups, environmentalists, students, and military personnel, has scheduled a total of 64 beach cleanups this spring. These volunteers hope to clean up Taiwan's beaches before the summer holiday season arrives.

EPA Administrator Hau Lung-bin personally led a group of EPA colleagues in taking part in a spring beach cleanup jointly organized by the EPA, the Taipei County Environmental Protection Bureau, and



Administrator Hau cleans up Watzuwei Beach with his EPA colleagues

the Public Television Service at Watzuwei Beach (挖子尾沙灘) in Taipei County's Pali Township (八里鄉) on May 18. Through his personal example, Hau was aiming to encourage the public to get together and participate in beach cleanups and to instill a volunteer spirit. On that day, around 900 people came together to gather trash and debris. The EPA hopes the examples set by these volunteers will prompt others to join in the other beach cleanups scheduled this spring.

According to EPA statistics, beach cleaners cleared 43,231 metric tons of garbage from 1,000 kilometers of recreational coastline, including areas along the coasts of Penghu, Lanyu, and Green Island, in 2001. This volume is approximately equivalent to the amount of garbage generated in all of Taiwan in a two-day period. In 2001, volunteers and workers contributed a total of 133,491 person-times to beach cleanups. Sanitation personnel of local environmental protection agencies and temporary workers hired by these agencies contributed 71,246 person-times, military personnel provided 4,026 person-times, and another 58,219 person-times were logged by environmental volunteers, students, and citizen groups.

Most beach cleanups around the world are initiated by local civic groups, schools, and volunteer groups that rely on the support of concerned individuals. The EPA also hopes to encourage private citizens to participate in annual beach cleanups, and therefore has chosen to have personnel of all levels from all environmental protection agencies set examples for the public at large by participating in beach cleanups. Groups that wish to adopt beaches and individuals interested in cleaning up beaches this spring may inquire at local environmental protection agencies or visit the EPA's website for related information. The EPA also calls on the public to show its concern for others and the environment by carrying away their trash after barbecuing, fishing, and engaging in water sports and other recreational activities at coastal areas. By leaving simply our footprints, we can ensure that Taiwan's coastal areas remain clean and beautiful and raise the quality of these recreational areas.

For more information, please call 02-2311-7722 ext. 2890, or visit the EPA's beach cleanup website at <http://www.epa.gov.tw/j/sanitation/cleanbeach/91spring.xls>.

Air Quality

Best Available Control Technology Regulations Drafted

The EPA has drafted BACT regulations in order to further implement regulations related to air quality control regions and TQC. These draft regulations require operators to adopt BACT when installing new stationary pollution sources or modifying existing ones and when the pollution volumes of these sources exceed specified limits.

Articles 6 and 8 of the *Air Pollution Control Act* dictate that operators adopt best available control technology (BACT) when installing or modifying stationary pollution sources in Class III air quality control regions and total quantity control (TQC) zones that do not meet air quality standards and when the pollution volumes of these sources exceed specified limits. To implement these regulations, the EPA has released two drafts: *Air Pollution Emission Quantity Criteria for New*

(Expanded) and Modified Stationary Pollution Sources (新(增)設或變更固定污染源空氣污染物排放規模) and *Best Available Control Technology for Stationary Pollution Sources* (固定污染源最佳可行控制技術). The former designates which stationary pollution sources are required to utilize BACT, while the latter defines which BACT operators can employ.

These drafts would require operators, when installing or modifying stationary pollution sources in Class III air quality control regions and total quantity control (TQC) zones that do not meet air quality standards, to adopt BACT when their maximum annual emissions volumes exceed the limits listed below even after the use of controls and treatment.

1. BACT is required for new or modified stationary pollution sources (those regulated under Article 3-1-2 of the *Permit Regulations for the Installation, Modification, and Operation of Stationary Pollution Sources* (固定污染源設置變更及操作許可辦法)) when annual SO_x emissions exceed 60 metric tons, annual NO_x emissions exceed 40 metric tons, annual VOC emissions exceed 30 metric tons, or annual total

suspended particle (TSP) emissions exceed 15 metric tons.

2. BACT is required for modified stationary pollution sources (those regulated under Article 3-1-1 of the *Permit Regulations for the Installation, Modification, and Operation of Stationary Pollution Sources*) when annual SO_x emissions exceed 250 metric tons, annual NO_x emissions exceed 200 metric tons, annual VOC emissions exceed 200 metric tons, or annual TSP emissions exceed 200 metric tons.

The draft of *Best Available Control Technology for Stationary Pollution Sources* expands standards for the types of BACT that can be adopted for stationary pollution sources, thereby affording operators greater flexibility in selecting BACT. In addition to continuing to permit the use of traditional pollution control equipment, these drafts would also allow operators to control emission by improving manufacturing processes, using clean raw materials and fuels and recyclable materials, and adopting other methods approved by central competent authorities.

For more information, please call 02-2311-7722 ext. 2682.

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