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## Feature Article

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EPA Administrator Dr. Lung-Bin Hau on November 21 paid a special visit to Shih kang Township in Taichung County in order to gain a deeper understanding of the successes and challenges of recycling kitchen waste at the township level. One of the EPA's major projects in 2002 is to fully expand the recycling of kitchen waste to the township level.

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## *Adopting a “No Regrets” Policy in Response to Kyoto Protocol*

The recently ended COP7 conference reached a resolution that the Kyoto Protocol will enter into force in 2002 as originally scheduled. Although Taiwan is not a signatory, based on its obligations as a member of the global community and willingness to comply with international conventions, it will work towards the implementation of a “No Regrets” policy and the establishment of a climate change working group, which will include specialists in relevant international law.

The Seventh Conference of the Parties (COP7), which was held under the UN Framework Convention on Climate Change, concluded on November 9th in Marrakesh, Morocco, after passing two important resolutions: the Marrakesh Ministerial Declaration and the Marrakesh Accords.

According to the EPA, the most notable of these is the Marrakesh Accords. These accords specify operating guidelines and explicitly define several articles of the Kyoto Protocol that have generated much controversy over the past three years. The Marrakesh Accords consist of 15 documents, the main content of which encompasses guiding principles for national greenhouse gas statistics systems, operating procedures and standards for the Kyoto mechanism and penalty measures under the compliance system. These accords will enable the Kyoto Protocol to take effect as expected in 2002.

Responding to the impending implementation of this international convention, the EPA states that although Taiwan is not a signatory, it will still make implementation of a “No Regrets” policy an immediate priority based on its obligations as a member of the global community and willingness to comply with international conventions. Seeking to significantly

reduce greenhouse gas emissions, implementation will include promotion of energy conservation, improvement of energy efficiency and extension of the use of clean energy.

The chairman of the conference appealed for discussion of the responsibility of developing nations to reduce greenhouse emissions, and Taiwan’s representative delegation actively discussed this issue with other participants. Participants indicated that the reduction responsibilities of developing nations would be formally addressed at some point after the Kyoto Protocol takes effect—possibly in 2005.

The EPA feels that as a developing nation, Taiwan should make the estimation of greenhouse gas reduction costs, establishment of a reduction strategy schedule and assessment of domestic reduction potential its first priority. When committing itself internationally to reductions, Taiwan should leave room to look after national interests by proposing, at appropriate opportunities, a reduction position that is diversified and maintains flexibility.

The EPA finally notes that the Marrakesh conference explicitly called for the Kyoto Protocol to enter into force in 2002. Because it is possible that the reduction responsibilities of non-Annex I nations (developing nations) will gradually be enlarged during the subsequent few years, Taiwan should take prudent response measures, including the establishment of a climate change working group at the earliest possible date. This move would secure an advantageous negotiating position for the country when the stage of negotiations over developing nation obligations begins. ▲

## *EPA Clamps Down on Farmland Polluters*

**The EPA initiated investigations of factories suspected of being pollution sources near agricultural land listed as Class V heavy metal pollution zones on November 14<sup>th</sup>. EPA Administrator Hau and the two EPA deputy administrators each respectively headed inspection teams in northern, central and southern Taiwan. These teams identified 71 violators during the two days of investigations, handing out 85 notifications of violation. These impressive results demonstrate the EPA’s determination to thoroughly eradicate heavy metal pollution sources.**


The recent discoveries in Yunlin, Taichung and Changhua counties of cadmium-tainted rice grown in fields polluted with heavy metals has induced a general state of apprehension among Taiwan’s citizens. Aiming to quell public fears, the EPA initiated investigations of factories suspected of being pollution sources near agricultural land listed as Class

V heavy metal pollution zones on November 14<sup>th</sup>. EPA Administrator Hau and the two EPA deputy administrators each respectively headed respectively inspection teams in northern, central and southern Taiwan.

On November 14<sup>th</sup> and 15<sup>th</sup>, EPA inspection teams conducted thorough investigations of electroplating, metal surface finishing and plastic stabilizer factories located in the vicinity of the 319 hectares of agricultural land around Taiwan known to be polluted with heavy metals. These teams identified 71 violators, handing out 85 notifications of violation. These impressive results demonstrate the EPA’s determination to wipe out all heavy metal pollution sources.

Administrator Hau declared that the EPA would conduct a series of investigations of electroplating, metal surface finishing and plastic stabilizer factories over the next three months, and that it would absolutely not allow the year-end elections to interfere with the proper enforcement of the law or cause the EPA to relax its investigations in any way. Concerning unlicensed factories discovered to be major sources of pollution, the EPA, in addition to meting out penalties on the spot, will coordinate with the Ministry of Economic Affairs, local environmental bureaus and construction authorities in order to cut off water and power to these plants and even carry out forced evictions. As for legally licensed factories found to be in violation of environmental regulations, the EPA will continue to investigate these operators and hand out penalties as required in order to effectively put a stop to their polluting behavior. The EPA has called on factories to obey environmental regulations and to appropriately operate pollution control facilities so as to avoid penalties. These fines mean

that illegal operation could cause factories to loose more than they gain.

In order to establish a firm connection between pollution and pollution sources, the EPA will analyze samples of pollution discharged from suspected factories near polluted farmland and of bottom sludge from irrigation ditches. In the case that irrigation ditch bottom sludge is discovered to be polluted, the EPA will work in close coordination with the Council of Agriculture in order to pursue the thorough clean up of pollution. The EPA will also continue to conduct detailed reviews of major pollution sources and will survey and analyze the layers of bottom sludge in irrigation ditches located in areas polluted with heavy metals. This will allow the EPA to understand and estimate the history and percolation of this pollution and to identify pollution sources with certainty. The EPA will conduct the remediation of polluted farmland and seek compensation from polluters in accordance with the *Soil and Groundwater Pollution Remediation Act*. 

## *Air Pollution Permit Procedures Simplified*

**The EPA formally announced revisions to *Permit Regulations for the Installation, Modification and Operation of Stationary Pollution Sources* on November 7<sup>th</sup>. These amendments, aiming to simplify permit application review procedures in the light of the current practical needs of industry, will help raise the competitiveness of such sectors as the semiconductor, biochemical and pharmaceutical industries.**

The EPA promulgated revisions to *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) on November 7<sup>th</sup>. These revisions include the amendment of 12 articles, the elimination of 1 article and the addition of 7 new articles. There were a total of 22 articles in these regulations following the last revisions made in 1999; the latest revisions bring the number of articles to 28.

The EPA states that while these revisions are quite major, the spirit of the original regulations has been maintained. The primary type of revision is the simplification of air pollution permit application review procedures under the government's principle of simplifying government procedures for the convenience of industry.

Market conditions often require some industries, such as the semiconductor, biochemical and pharmaceutical industries, to make rapid changes to production volumes or product lines. Aiming to meet the practical needs of these industries, the revised regulations simplify permit applications and also, so as to be in line with the *Administrative Procedures Act* (implemented on January 1, 2001), provide more de-

tailed regulations concerning application documents and procedures for the movement and expansion of facilities. Under the previous regulations, enterprises were required to apply for new permits every time adjustments to production capacity or product lines necessitated modification or movement of facilities. This wasted both time and money, and stifled competitiveness. Furthermore, so as to provide greater flexibility to enterprises, the revised regulations allow enterprises that meet the requirements of the permit regulations to apply for a five-year permit based on projections for their greatest production capacity or greatest operating levels over the following five years.

The second major type of revision is the redefinition of "modification" in these regulations. This allows for a discrepancy of 10% between actual operational levels and levels for which enterprises have received permits, granting enterprises a greater degree of operational flexibility.

These revisions also eliminate the pre-treatment control and treatment regulations that were among the original regulations. In their place, the revised regulations adopt post-treatment emissions volume as reference values. In the new definition of "modification," the threshold for annual permitted pollution emissions has been raised from the original 10% to 20%. Also, as long as other related regulations are not violated, enterprises will be granted a permissible discrepancy of 10% for operating conditions.

The third major type of revision clearly prescribes the operating conditions that should be maintained during permit testing and lists the conditions under which operators are exempt from permit testing.

Operators are frequently unable to run facilities at the highest production rate or highest usage rate for raw materials or fuel at the time they are applying for permits, and are therefore unable to conduct permit related testing. Due to the application delays this situation has caused, these simplified permit regulations only require operators to achieve an operating rate of just 80% of their maximum rates during testing.

### *Thirteen Measures to Improve Urban Air Quality*


**The EPA has formulated thirteen measures that specifically address the special problems of urban air pollution. These are primarily mobile source pollution control measures targeting motor vehicles. However, there are also measures for regulating stationary pollution sources. These include the improvement of water sprinkling and sweeping to keep dust down on city streets and at construction sites and the regulation of emissions from food and beverage establishments.**

The EPA will begin promoting its *Specific Measures for Controlling Urban Air Pollution* (防制都會區空氣污染具體可行政策) in 2002. This includes thirteen pragmatic measures aimed at improving the increasingly serious problem of urban air pollution. The EPA formulated these measures based specifically on studies of air pollution in the three major urban areas of Taipei City, Kaohsiung City and Taichung City.

The EPA notes that these measures are intended to specifically address the special problems of urban air pollution. They are primarily mobile source pollution control measures targeting motor vehicles. However, there are also measures for controlling stationary source pollution. These include the improvement of water sprinkling and sweeping to keep dust down on city streets and at construction sites and the regulation of emissions from food and beverage establishments.

Eight of these thirteen measures are existing air pollution control measures, while five are newly devised measures. The existing measures include Controls for New Motor Vehicles, Controls for Motor Vehicles Already in Use, Fuel Quality Controls, Promotion of Traffic Management and Control Measures, Filling Station Gasoline Vapor Recovery, Roadway Water Sprinkling and Sweeping, Construction Site Pollution Controls, and Planning and Establishment of Bicycle Paths in Urban Areas. The new measures include Importing Manufacturing

In addition, air pollution emissions testing is not required for air pollutants for which the government has not announced testing methods or for public and private places for which there are no emissions points that can be tested.

Other important revisions include the provision of explicit methods for estimating emissions volume for annual permits and for announcing approved permit applications. This will facilitate the implementation of total quantity control mechanisms. Revisions have also been made concerning the deadline by which the EPA is required to notify and issue operating permits after permit reviews are completed. 


Technology for Compressed Natural Gas (CNG) Buses and Bus Bodies, Expanding the Promotion of Liquefied Petroleum Gas (LPG) Vehicles, Developing Low-Pollution Electronic Fuel Injection Engines for Scooters, Air Pollution Controls for Food and Beverage Establishments and Landscaping Exposed Public Land in Urban Areas.

The EPA estimates that these thirteen measures will require over NT\$ 1 billion from the Air Pollution Control Fund after they are implemented in 2002. Controls for Motor Vehicles Already in Use and Importing Manufacturing Technology for Compressed Natural Gas (CNG) Buses and Bus Bodies, requiring NT\$ 444 million and NT\$ 270 million respectively, will account for about 70% of the total funds needed for these thirteen measures.

The EPA expects these two measures to significantly improve urban air quality. In particular, the Plan for the Promotion of a Regular Inspection System for Motorbikes, under the Controls for Motor Vehicles Already in Use, is predicted to cut carbon monoxide (CO) emissions by approximately 9,400 kilotons and hydrocarbons (HC) emissions by approximately 4,600 kilotons every year.

The replacement of diesel buses with CNG buses is also expected to bring about a profound improvement in urban air quality. There are currently over 3,000 buses in Taipei City and over 500 buses in Kaohsiung City. Based on an annual distance traveled of 80,000 kilometers per bus, replacing 60% of these diesel buses (about 2,000 buses) with CNG buses is forecast to reduce emissions of nitrogen oxides (NO<sub>x</sub>) by 2,500 kilotons and cut particulate matter (PM) levels by 240 kilotons every year. This would mean a reduction of around 60% in the volume of bus-generated pollution in Taipei City and Kaohsiung City each year, making the air in these cities a great deal cleaner.

Finally, the EPA is calling on the public and government agencies to provide their full support and cooperation in order to help the EPA effectively implement these policies. This support will help the EPA

achieve its goal of providing a comfortable living environment for the citizens of Taipei City, Kaohsiung City and Taichung City and of making these cities international environmental cities. 

## *Chemical Attack Drills to be Expanded to Local Governments*

**Taiwan's first chemical attack civil defense drill was completed at the end of October. The EPA, noting that this drill was simply a "demonstration and education" drill, states that the next step requires the enactment of real drills and must extend the enactment of such drills to other central competent authorities and to local governments. Only by taking this next step will the desired results and goals of the demonstration drill be achieved.**

The EPA on October 30<sup>th</sup> held an evaluation meeting addressing Taiwan's first terrorist chemical attack civil defense drill, which was conducted at the Hsiao Nanmen Mass Rapid Transit station in Taipei City on October 27<sup>th</sup> (see EPM Vol. IV, Issue 11). Representatives of all participating agencies were invited to this meeting in order to engage in a joint discussion of the drill.

EPA Deputy Administrator Ta-hsiung Lin (林達雄), who directed the drill, said that the full cooperation of the participating agencies allowed the EPA to succeed in completing Taiwan's first chemical attack drill. Lin added that the drill, which achieved quite a high degree of realism, accomplished the goal of establishing evacuation and notification systems. These systems are now available in the case of a real attack.


However, this drill was simply a "demonstration and education" drill. The next step requires that the enactment of such drills be expanded to local governments and to other central government competent authorities, especially those in charge of congested public areas. Local governments and central competent authorities should devise their own emergency response plans, notification systems and evacuation plans. They should also enact their own drills. Only by doing so will the goals of this first demonstration drill be truly fulfilled.

Those at the meeting, including representatives from the Army and the Executive Yuan Department of Health, engaged in a lively discussion and achieved the following resolutions.

1. Now that this demonstration drill has been completed, local governments and central competent authorities should organize similar drills that enact a response to either a chemical attack or chemical emergency.
2. Central competent authorities, particularly those in charge of congested public areas, should use the lessons learned from this demonstration drill

in order to enact their own emergency drills at irregular intervals.

3. Drills for chemical attacks should be included in drills conducted by fire departments in order to strengthen disaster prevention capabilities. Current fire drills do not include drills for chemical attacks. This lack of preparation could endanger the lives and health of firefighting personnel, as they are the first to arrive at a disaster scene and conduct rescue work.
4. It was discovered during this drill that, despite the support of Army chemical agents personnel, there was an insufficient supply of protection facilities and equipment. This problem will become even more evident after local governments and central competent authorities begin conducting their own drills. Consequently, it was resolved at this meeting that each relevant agency should increase its procurements of such facilities and equipment based on its needs.
5. Following the instructions of Executive Yuan Premier Chang Chun-hsiung, the EPA will print and distribute handbooks and small cards detailing procedures for the public to follow in the case of a chemical attack. In addition, a videotape or VCD of the drill may be produced and distributed to local governments, institutions and groups. These efforts will insure the drill's desired goal of public education is achieved.
6. The government's current disaster prevention system should be made a part of the Ministry of the Interior's National Civil Defense Mobilization System, which it will begin promoting in 2002, in order to achieve optimal results. During the meeting, representatives from the National Police Administration pointed out that neither the Central Police University nor the Taiwan Police College offer courses related to chemical attacks. This drill has provided material for the formulation of teaching materials that will help police agencies prepare for such a disaster.

The EPA says that this demonstration and education drill is simply a beginning and that the expansion of similar drills to local governments is the most important issue. Therefore, the central government will begin helping local governments formulate fast and effective notification systems with the aim of reducing the scale of disaster. 

## Feature Article

# Water Quality Management and Soil and Groundwater Remediation Framework

To improve the environmental quality of rivers and waterways, the ocean, lakes, reservoirs, soil and groundwater, the EPA has proposed the Water Quality Management and Soil and Groundwater Remediation Framework, which lays a course for water quality protection policy over the next three years. In our feature article this month, we have invited Bureau of Water Quality Protection Director General Shean-rong Cheng to talk about administrative policy, introduce a new Bureau of Water Quality Protection approach to river pollution remediation, and discuss the bureau's budgetary situation.

## Director General Cheng Explains Water Quality Management

We invited Bureau of Water Quality Protection Director General Shean-rong Cheng (鄭顯榮) to discuss his administrative policies for this month's feature article. Throughout the entire interview, which took less than an hour, Director General Cheng spoke freely and with confidence, but he always kept a small stack of papers clutched in his hand. Although the papers were not bound with a glossy cover, they represented our country's most important water quality protection plans at our current stage of development, and are entitled the Water Quality Management and Soil and Groundwater Remediation Framework (水體品質管理及土壤地下水污染整治架構, referred to below as the Water Quality Management Framework). The main goals of this framework are to improve the environmental quality of rivers and waterways, the ocean, lakes, reservoirs, soil and groundwater, preserve ecological systems and insure the sustainable use of resources.

Director General Cheng noted that water quality protection extends from rivers and waterways all the way to groundwater. And because of water's mobility, all forms of water are interconnected. We have already gained considerable experience in water protection and pollution prevention work, and achieved significant results. Because of this, the most urgent task at hand is not to establish more hardware facilities, but rather to improve our software. In other words, we must collect and make use of more environmental background data.

The collection of background environmental data will be the first priority after the drafting of laws and regulations for the Water Quality Management Framework is completed. The purpose of collecting and organizing environmental background data is to obtain real-time information and provide a basis for policy administration, said Director General Cheng. With this in mind, water quality monitoring will be conducted over the next three years (2002~2004) throughout rivers and waterways administered by the central government and key

counties. The items to be monitored will include heavy metals, dioxin and eutrophication indicators, as well as conventional water quality items for wastewater and reservoirs. The river and waterway pollution cleanup decision-making support system will be updated and maintained, and groundwater monitoring stations will be planned and deployed.

In addition, conventional pollution indicators will no longer be relied on to determine the degree of urgency in implementing water cleanup policy. Instead, cleanup will be conducted in light of the pollution characteristics of specific rivers and waterways. This change will allow more flexibility in cleanup work, and better grasp of pollution characteristics will enable target pollutants to be quickly pinned down. While future cleanup efforts will emphasize overall effectiveness, the EPA feels that making cosmetic and symbolic improvements is as important as dealing with the roots of environmental problems. If even refuse floating in a river or at a river mouth cannot be cleaned up, Cheng said for example, how can the public have confidence that the EPA has the ability to clean up truly serious environmental problems? This is why it is important to dispose immediately of visible pollution, and not just create an illusion of effectiveness.

As far as marine pollution prevention policy is concerned, the focus of this year's and next year's work will be on the establishment of a marine emergency response system. Major oil pollution incidents can't be attributed solely to international ships, and most are actually caused by domestic vessels. The key to dealing with these pollution incidents is therefore to effectively support local government and strengthen the facilities and equipment needed for pollution prevention. In this regard, Director General Cheng stated that the EPA would deploy "mobile offices" in the future, so that whenever a major pollution incident occurs, the trailer offices can be towed to the scene without delay to establish an emergency response headquarters.

With respect to the drafting of regulations in connection with the Marine Pollution Control Act, these regulations have either been already announced or their drafts are being currently deliberated. In the case of regulations concerning the determination of marine control zones, as in the case of soil and groundwater pollution control regions, the advance announcement of marine pollution control zones can avoid unnecessary losses to coastal fish farmers who had originally been unaware of the situation.

While there lately have been many media reports on the collection of water pollution fees, plans have not yet been finalized. Because the public will ask why the EPA wishes to collect NT\$1.2 billion every year, further planning must be performed in connection with fee collection standards, fee collection implementation and fee uses.

Turning to overall water quality protection, the main reason for the difficulty of implementing industrial park wastewater pollution reduction and household sewage pollution reduction is that different competent authorities are involved: The Industrial Development Bureau, MOEA, is responsible for the former, while sewer systems are under the oversight of the Construction & Planning Administration, MOI. Addressing industrial park wastewater, the EPA has decided to take the bull by the horns and tackle the problem by adopting a graduated, classified management approach that will include ongoing audits of pollution sources and intensified audits of special industries. In the case of household sewage, because it is impossible to ask the public to replace septic tanks with discharge line equipment capable of handling all household sewage overnight, immediate measures will primarily consist of guidance, control and awareness.

#### **Water Quality Management and Soil and Groundwater Remediation Framework**

Strategy	Measures
Establishment of laws and systems	<ol style="list-style-type: none"> <li>1. Review regulations of Water Pollution Control Act</li> <li>2. Study and revise regulations of Marine Pollution Control Act</li> <li>3. Promote enforcement of Soil and Groundwater Protection and Remediation Act</li> </ol>
Collection environmental background data	<ol style="list-style-type: none"> <li>1. Collect environmental background data for river basins, reservoirs, soil, groundwater, ocean and bottom mud</li> <li>2. Plan and review analysis and use of environmental background data and monitoring station data</li> </ol>
Water quality maintenance in rivers and reservoirs	<ol style="list-style-type: none"> <li>1. River basin management plan</li> <li>2. Non-point source pollution management plan</li> <li>3. Industrial wastewater pollution reduction plan</li> <li>4. Industrial park wastewater pollution reduction plan</li> <li>5. Household sewage pollution reduction plan</li> <li>6. Pollution source audit plan</li> </ol>
Marine water quality maintenance	<ol style="list-style-type: none"> <li>1. Marine discharge permit tasks and management</li> <li>2. Control and management of marine control zones and pollution source wastewater emissions</li> <li>3. Cleanup and disposal of marine oil pollution</li> </ol>
Soil and groundwater pollution cleanup	<ol style="list-style-type: none"> <li>1. Establishment of fund finance and management committee system</li> <li>2. Strengthen soil and groundwater pollution cleanup response and polluted site control plans</li> <li>3. Implement survey, assessment and disposal grade planning for pollution cleanup sites</li> <li>4. Establish effective compensation request mechanism for fund</li> </ol>
Establishment of emergency response system	<ol style="list-style-type: none"> <li>1. Emergency respond system for rivers, waterways and reservoirs</li> <li>2. Promote establishment of a water pollution incident emergency respond system</li> <li>3. Marine pollution emergency response system</li> </ol>

#### **New Remediation Approach to Cleanup of Putzu River**

River and waterway cleanup has always been one of the EPA's most consistent and intensive activities. But because this task must involve the numerous competent authorities in charge of target industries, bureaucratic hurdles have been daunting, and the government's tireless efforts to clean up rivers and waterways have never delivered the desired ultimate benefits. Facing up to this less than desirable situation, starting this year (2001) the EPA has made a break with its past methods in the form of the Putzu River Basin Pollution Remediation Project (see EPM Vol. IV, Issue 10).

The Putzu River Basin Pollution Remediation Project is different from past approaches in the following ways:

First, cleanup is being performed using the most effective and appropriate methods, with an eye to time-efficiency, in accordance with the characteristics of river and waterway pollution. The EPA points out that, of the major pollution sources affecting the Putzu River, 75% consist of household sewage, 13% consist of livestock wastewater, and 6.4% consist of industrial wastewater. Because it accounts for the greatest share of pollution, the

cleanup of household sewage is given the highest priority under the project. In addition, the project calls for the simultaneous cleanup of all possible pollution sources throughout the entire basin. This synchronized approach promises to lower costs while shortening the cleanup timetable.

Second, the strengthening of horizontal liaison and communication has effectively integrated the cleanup efforts of central and local governments. The EPA reminds people that because local governments, and not the central government, are responsible for implementing some of the most important river cleanup tasks, even the best central government plans will be ineffective without full local cooperation. EPA officials have made constant efforts to communicate with local governments during the implementation of the project, and have received a high level of support. The Chiayi City government has even taken the step of establishing a dedicated sewage system subsection on December 1<sup>st</sup>; subsection personnel are exclusively responsible for performing water pollution cleanup work.

Third, the EPA is assisting in problem resolution and actively acquiring new pollution reduction technology. For example, the EPA is acquiring a new Japanese soil chamber biological treatment technique that uses natural methods to clean up wastewater in water source zones, non-urban planning zones and areas where sewer systems do not reach. While the EPA often outsourced environmental protection

technology problems to technical consulting companies in the past, the EPA is playing a technical support role in the Putzu River Basin Pollution Remediation Project, and will use overseas fact-finding missions to bring advanced foreign environmental protection technology to Taiwan for use in remediation work.

Fourth, the EPA is promoting local public participation, conducting environmental protection education and establishing ecological indicators and an ecological park. The ecological park is leaning towards the adoption of “ecological, near-natural working methods,” and considers maintaining biodiversity to be its first priority; concrete structures and other manmade objects will be avoided as much as possible in the park. After cleanup has been completed, the Putzu River will be like one of the “community rivers” maintained by local residents that are seen in the industrialized nations.

The job of river and waterway cleanup is not something that can be completed in one or two days, nor can it be implemented by a single government agency acting on its own. The disappointing results of past cleanup work certainly don't mean that remediation has been a failure, but it has been learned that lack of integration inevitably leads to sharply reduced effectiveness. The implementation of the Putzu River Basin Pollution Remediation Project has thus quietly caused a major shift in thinking about river and waterway cleanup.

## Dissecting the Bureau of Water Quality Protection's Annual Budgets

Considering the complexity of its duties and the extensive scope of its work, the Bureau of Water Quality Protection's annual budget—usually around NT\$500 million—is by no means as large as one might imagine. The following table shows the bureau's budget for the 15-year period from FY1988 to FY2002.

High in the early years, the bureau's budget gradually drops starting in 1991, and doesn't start rising until roughly 1999, noted Senior Specialist Hung-teh Tsai (蔡鴻德) of the Bureau of Water Quality Protection. The main reason the budget was above NT\$700 million or even NT\$1 billion in some years was because the funding required for the implementation of certain special programs, usually rather large amounts, was included within the regular budget. Taking 2000 as an example, the bureau's total budget was close to NT\$1.3 billion, but nearly NT\$700 million was needed to compensate and remove hog raisers from water source zones—a program that is soon to be completed. Other recent programs have included the beautification of the


Erchung Floodway and other riverside beautification and landscaping projects.

Although the bureau's funds are limited, it still manages to satisfactorily promote water quality protection and upgrade environmental protection facilities at the local government level. Of the 2001 budget, which rose slightly to a bit more than NT\$500 million, roughly NT\$180 million is earmarked for water quality protection and around NT\$330 million is for local government environmental protection facilities. The former includes a number of clearly defined projects that are closely connected with water quality protection, including basin management projects and sewer system management projects. In contrast, upgrading local government environmental protection facilities oversteps the boundaries of water quality protection, at least as narrowly defined, and includes funding for the removal and disposal of unspecified waste by local governments, the construction of small incinerators in isolated areas, and other waste disposal facilities. Because these projects can effectively prevent



wastes from polluting groundwater or water sources, the Bureau of Water Quality Protection allots budget funding for their implementation.

The formal start of soil and groundwater pollution cleanup work in November of this year has required immense expenditures. Apart from levying

soil and groundwater pollution cleanup fees from announced designated firms, the Bureau of Water Quality Protection must set aside a large amount of money in next year's (2002) budget for this work. It's not surprising that the provisional budget figure is the highest ever. 

***Year-by-year Overview of Water Quality Protection Budget, 1988 to 2002 (units: NT\$)***

Year	1988	1989	1990	1991	1992	1993	1994	1995
Budget	703,912,000	1,271,137,000	233,015,000	235,246,000	641,293,000	750,230,000	664,818,000	413,085,000
Year	1996	1997	1998	1999	Second half of 1999 & 2000	2001	2002; [not final]	
Budget	399,820,000	320,638,000	307,908,000	491,593,000	1,297,314,000	546,516,000	1,316,571,000	

***Tracking Industrial Waste Flows in Real-time Using GPS***

**The EPA plans to start using global positioning system (GPS) technology next year to perform the real-time tracking of trucks transporting industrial waste. This action will enable the EPA to keep close tabs on industrial waste flows and prevent illegal dumping or discharge.**


Since the EPA established the Industrial Waste Control Center in October of last year (2000), the Center has used on an online application and reporting system to offer more convenient public service and strengthen control over industrial waste. Current plans call for the future use of global positioning system (GPS) technology to track and control the transport of industrial waste (see EPM Vol. IV, Issue 2).

Article 31-1-3 of the revised *Waste Disposal Act* (廢棄物清理法), enacted in October of this year, explicitly states, "The central competent authorities shall specify and announce industrial waste transport tools. Real-time tracking systems shall be installed and maintained in normal operation in accordance with the competent authorities' specifications." This provides a legal basis for the installation of real-time tracking systems in industrial waste transport vehicles, and sanctions fines for those who violate regulations; firms committing severe violations may be made to stop operations or go out of business.

The EPA consequently plans to announce that, in accordance with the provisions of the *Waste Disposal Act*, specified waste haulers must install real-time tracking systems in their industrial waste transport vehicles. In these systems, GSM (Global System for Mobile Communications) recorders on

board the trucks will receive free positioning signals from a fleet of 24 United States positioning satellites. The existing GSM mobile communications system will then be used to transmit the vehicles' position coordinates to a control center, which will employ a 1/5000 scale electronic map system of all of Taiwan to perform real-time positioning and accurately keep tabs on the trucks' whereabouts. This oversight will prevent illicit dumping and the transport of questionable wastes.

There are currently around 1,700 trucks legally authorized to haul industrial waste in Taiwan. Because of original concerns about the cost burden to the firms installing GPS equipment, the implementation draft will specifically target sizeable transport firms that handle large quantities of waste. To reduce impact on the industry, the compulsory GPS systems will be checked at the time of license application, change, or renewal. It is understood that firms required to install real-time tracking systems will have to pay approximately NT\$30,000~40,000 to install each on-board GPS unit, and must thereafter pay basic monthly GSM mobile phone fees.

The EPA will hold public hearings and share views with all parties during the future implementation process, and it is expected that a multi-stage implementation plan will be announced next year. Finally, the EPA has reaffirmed that it will step up efforts to stamp out use of illegal transport vehicles, thereby safeguarding the rights of lawful operators and restoring Taiwan's clean environment by eliminating the problem of illicit waste dumping. 

## News Briefs

### **Jane Goodall Promotes "Root and Sprout" Program in Taiwan**

Prominent chimpanzee researcher and environmentalist Dr. Jane Goodall arrived in Taiwan for her sixth visit on November 9<sup>th</sup>. The goal of Goodall's visit was to promote the "Root and Sprout" international environmental education activity and meet with President Chen Shui-bian. The President used this opportunity to sign the "Love the Earth, Don't Release Balloons" petition and recommend that the National Day Preparatory Committee stop arranging for the release of balloons starting next year.

### **EPA Subsidy for Replacement of Diesel Buses**

To sharply improve urban air quality and give city residents a cleaner living environment, the EPA is pushing ahead with its six-year plan to replace diesel buses in the two major urban areas of Taipei and Kaohsiung with compressed natural gas (CNG) buses. Under this plan, the EPA will provide subsidies of NT\$2 million per bus for the purchase of CNG buses, and it looks forward to replacing 2,325 old buses in Taiwan's two largest urban areas within six years. After a disbursement report for the plan—expected to cost roughly NT\$6 billion over six years—is submitted to the Executive Yuan for approval in December, detailed planning and implementation will begin next year.

### **Soil Pollution Fund Management Committee Established**

The Soil and Groundwater Pollution Remediation Fund Management Committee (土壤及地下水污染整治基金管理委員會), recently established by the EPA, held an inaugural conference personally hosted by EPA Administrator Dr. Lung-Bin Hau on November 13<sup>th</sup>. The Committee's chief mission is to review the collection, safekeeping and use of fund monies, oversee the fund's annual budget and final accounting, and audit the fund's state of utilization. The Committee began operating on the day of the conference, and formally announced the start of cleanup work.

### **EPA Bestows Awards on Green Businesses**

The EPA held the 10<sup>th</sup> "ROC Green Business Awards" ceremony on the morning of November 8<sup>th</sup>. Among the ten corporations honored for their superior contribution to environmental protection were China Motor Corporation's Hsinchu plant and Taiwan Applied Materials Co., Ltd. The selection process for the Green Business Awards looks at the following items: (1) environmental protection planning and management; (2) implementation of waste reduction; (3) end-of-pipe treatment of process pollution; (4) waste treatment and final disposal; and (5) promotion of environmental protection education and awareness. Applications for the 11<sup>th</sup> Green Business Awards will be accepted starting on March 15<sup>th</sup>, 2002.

### **Collection of Soil Pollution Cleanup Fees Initiated in November**

Regulations governing the collection of soil and groundwater cleanup fees, namely the *Regulations Governing the Collection of Soil and Groundwater Pollution Remediation Fees* (土壤及地下水污染整治費收

費辦法) and *Fee Rates and Types of Chemical Substances for which Soil and Groundwater Pollution Remediation Fees Must be Collected* (應徵收土壤及地下水污染整治費之化學物質徵收種類與收費費率), were announced on November 1<sup>st</sup>. These regulations, which went into force on the day they were announced, specify pollution cleanup fees to be collected from manufacturers and importers for designated chemical substances according to the amount produced or imported.

### **Mass Merchants Respond to Green Mark Program**

The EPA began cooperating with all large mass retail chains in November to help shoppers by specially marking and promoting "low-pollution, recyclable, resource-conserving" Green Mark Products. So far Taiwan's 26 Carrefour stores have taken the lead in implementing Green Mark measures and agree to specially note Green Mark certification in quarterly sales catalogs. The public may visit the Green Mark real-time information website at <http://www.epa.gov.tw/greenmark> to obtain information on Green Mark Products.

### **Assessment of Illegal Dumping Sites to be Completed this Year**

The EPA recently announced its progress in hazard assessment of 170 controlled illegal dumping sites throughout Taiwan. EPA data indicates that in the ongoing multi-year hazard assessment of 170 illegal dumping sites submitted for national control by local governments in 1998, 60 sites currently remain to be assessed, and all assessment operations are expected to be completed by the end of this year (2001). In addition, of the 14 sites assessed as Class 1, five have already been cleaned up or are currently being dealt with, and the clean up of the remaining nine is moving ahead according to schedule. The EPA will supervise dumping site waste cleanup work conducted by local governments, and will require these governments to demand compensation in accordance with the law from persons responsible for unlawful behavior.

### **EPA Cracks down on Illegal Export of Hazardous Waste**

The northern division of the EPA Inspection Team, working in conjunction with the Criminal Investigation Bureau, a bureau of the National Police Administration, and Environmental Protection Police Force, ascertained on November 22<sup>nd</sup> that the Tah Hai Company had illegally exported close to 100 tons of hazardous waste (heavy metal copper sludge) in batches to India and Australia on behalf of an illicit operator. This behavior is in violation of articles 18 and 22 of the Waste Disposal Act, and is punishable by fines ranging from NT\$60,000 to NT\$150,000 and imprisonment of from one to ten years. The EPA will continue its work of tracking down pollution sources and monitoring water quality. Copper sludge is one of the hazardous waste items listed as controlled in the Basel Convention signed by the UN Environmental Programme Commission in 1989.

## Soil and Groundwater Monitoring and Control Standards Announced

The EPA has announced four new monitoring and control standards for soil and groundwater pollution. These standards provide clear criteria for the implementation of monitoring and control work. The new soil monitoring standards primarily regulate heavy metals, while the new groundwater monitoring standards regulate both heavy metals and seven general items. The new groundwater control standards target the widest range of pollutants, including monocyclic and polycyclic aromatic hydrocarbons, chlorinated hydrocarbons, pesticides, heavy metals and general items.

Taiwan's soil and groundwater pollution prevention and control work, under the *Soil and Groundwater Pollution Remediation Act (SGPRA)*, can be divided into the three stages of monitoring, control and remediation. Standards and criteria for the first two stages of monitoring and control work are set based on the concentration of pollutants. For sites with a concentration of pollutants that exceeds standards, monitoring or control work must be initiated in accordance with regulations.

The EPA, in order to provide clear standards for soil and groundwater pollution monitoring and control work, announced the Soil Pollution Monitoring Standards, Groundwater Pollution Monitoring Standards, Soil Pollution Control Standards and Groundwater Pollution Control Standards on November 21<sup>st</sup>.

The pollutants regulated by the Soil Pollution Monitoring Standards include arsenic and seven other heavy metals. The Groundwater Pollution Monitoring Standards regulates eight heavy metals

and seven general items including total hardness. The regulatory scope of the Soil Pollution Control Standards includes eight heavy metals, 21 organic compounds (including benzene), eight pesticides (including Aldrin), dioxin and polychlorinated biphenyls. Groundwater Pollution Control Standards, regulating the largest number of items, sets standards for two types of monocyclic aromatic hydrocarbons (MAH), one type of polycyclic aromatic hydrocarbons (PAH), fourteen types of chlorinated hydrocarbons, eight types of pesticides, eight types of heavy metals and two general items.

To prevent the recurrence of such incidents as the discovery of cadmium-tainted rice, soil pollution monitoring and control standards for food-producing agricultural land are more stringent than those for other types of land. Also, stricter groundwater monitoring and control standards have been adopted for groundwater in watershed protection areas that is used for drinking water than for that which is not.

The EPA states that these new monitoring and control standards will have a major impact on all soil and groundwater pollution prevention and control work as they clearly list targeted pollutants and set clear thresholds for control mechanisms. The EPA, in consideration of the rapid development of new prevention and control technology, has also invited enterprises and environmental groups to submit specific scientific data to be used in making future revisions to these standards.



Regulation		Regulated Pollutants	Control Notes
Soil	Monitoring Standards	8 heavy metals	Stricter standards for food-producing agricultural land
	Control Standards	8 heavy metals 21 organic compounds 8 pesticides Dioxin and polychlorinated biphenyls	
Groundwater	Monitoring Standards	8 heavy metals 7 general items	Stricter standards for groundwater in watershed protection areas that is used for drinking water
	Control Standards	2 monocyclic aromatic hydrocarbons 1 polycyclic aromatic hydrocarbons 14 chlorinated hydrocarbons 8 pesticides 8 heavy metals 2 general items	

## Promotion of Kitchen Waste Recycling at Township Level

EPA Administrator Dr. Lung-Bin Hau on November 21<sup>st</sup> paid a special visit to Shihkang Township in Taichung County in order to gain a deeper understanding of the successes and challenges of recycling kitchen waste at the township level, and to call on the public to support kitchen waste recycling efforts and recognize the value

of this "green waste." One of the EPA's major projects in 2002 is to fully expand the recycling of kitchen waste to the township level. By expanding this policy, which is estimated to require a budget of NT\$ 300 million, the EPA also aims to reduce garbage volume by 20%.

The Control Yuan recently reprimanded the EPA and some local environmental protection bureaus for their failure to fully promote kitchen waste reduction, recycling and reuse policies and for not having established a unified garbage categorization system and color-code scheme for recycling bins. Taking a proactive stance in response to this criticism, EPA Administrator Dr. Lung-Bin Hau (郝龍斌) paid a special visit to Shihkang Township in Taichung County in order to gain a deeper understanding of the successes and challenges of recycling kitchen waste at the township level, and to call on the public to support kitchen waste recycling efforts and recognize the value of this "green waste."

Administrator Hau stated that the EPA will complete the unification of the national garbage categorization system by the end of the year and that one of its major projects in 2002 is the full expansion of kitchen waste recycling to the township level. Hau expects this project, which is estimated to cost NT\$ 300 million, to cut garbage volume by 20%.

The EPA says that the recycling of kitchen waste, which EPA statistics indicate accounts for 20-30% of total garbage volume, is sure to prove a major factor in reducing the volume of garbage and could help citizens who use government-issued garbage fee-collection garbage bags save a significant amount on garbage fees. In 1999, the EPA began a major demonstration and promotion program aimed at aggressively promoting kitchen waste recycling and reuse at the township and city levels. As a result,

around 4,500 households and organizations are currently participating in this recycling effort.

Administrator Hau, speaking from his background as a professional nutritionist, pointed out that kitchen waste has a very high economic value as it can be used to produce compost and, after high-heat sterilization, can be used to make pig feed. Hau added that each local government would be allowed to determine how it uses its kitchen waste based on its own needs.

Shihkang Township, with a population of over 16,000, has been one of the most successful townships in recycling kitchen waste. This township started recycling all of its kitchen waste on July 1<sup>st</sup> of this year. Collected kitchen waste is mixed with rice husks and sawdust to make compost. The township, with the assistance of scholars, began using this compost to grow vegetables in the middle of November, and sprouts have already begun popping up.

The EPA states that beginning in 2002 its kitchen waste recycling and reduction efforts will be expanded to additional counties and cities in order to involve all citizens. The EPA aims through these efforts to instill the public with a greater appreciation for the sustainable reuse of "green waste" and insure that this waste is handled properly so as to lighten the garbage handling pressures of local governments. Kitchen waste recycling, as an essential element of a diversified garbage handling policy, will help achieve the goals of garbage reduction and the sustainable use of resources. ▲

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