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Feature Column

Risk Assessment Mechanism to Aid Soil Remediation

Up and running for four years now, the Soil and Groundwater Pollution Remediation Fund Management Board has made outstanding achievements in terms of investigating and remedying soil pollution. The Board is now referring to foreign management mechanisms in its current task to revise control standards and monitoring criteria. This will help toward establishing a local risk assessment mechanism and a cross-ministerial soil and groundwater pollution prevention and remediation action plan.

The *Soil and Groundwater Pollution Remediation Act (SGPRA)* was promulgated on 2 February 2000. From November 2001, the EPA began levying soil and groundwater pollution and

remediation fees, and carrying out remediation work. The primary sources of soil and groundwater contamination are air pollution, water pollution, waste and toxic substances. Therefore a significant part of soil and groundwater pollution prevention work consists of setting up controls before pollution leaves its source. Once it has been confirmed that soil and groundwater pollution control standards have been breached, the SGPRA is there to provide soil and groundwater pollution controls and improvement measures.

The main achievements of the Soil and Groundwater Pollution Remediation Fund Management Board (SGPRFMB) in recent years include:

1. Farmland pollution investigation and improvement: General and special case investigations were carried out on farmland susceptible to high levels of pollution. Up to the end of October 2005, a total of 1,665 parcels of farmland were listed as pollution control sites (a total of 373 hectares), of which 1,138 parcels (about 258 hectares) have already been improved and removed from the list. Remediation is currently underway on the remaining 115 hectares.

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Ongoing Pollution Investigation and Monitoring

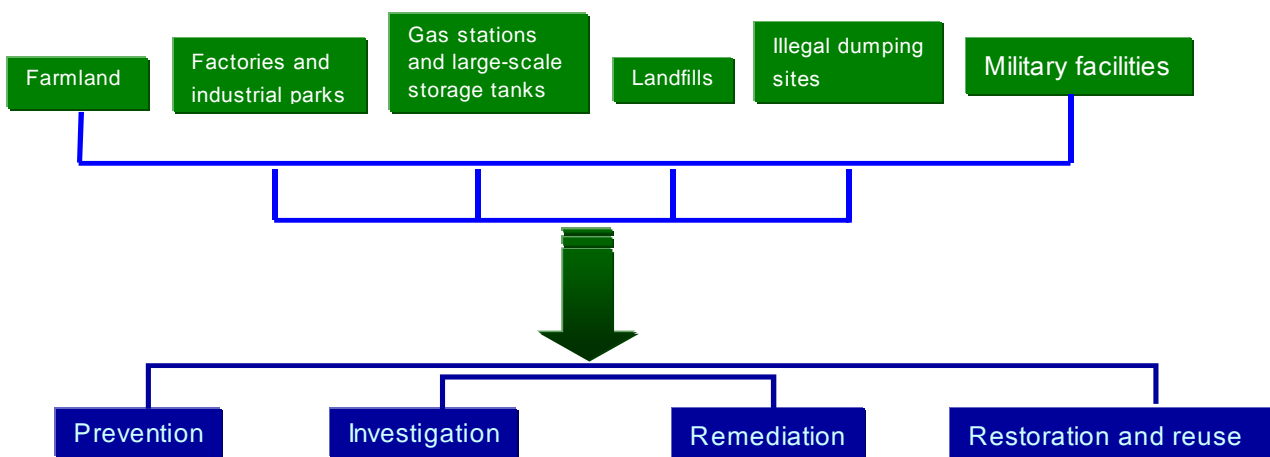
Table: Pollution sites by land use (Note: Statistics up to the end October 2005)

Land use	Total listed sites	Sites improved and removed from list
Agriculture	1,665 parcels, 373 hectares	1,138 parcels, 258 hectares
Gas station	32 sites	3 sites
Large-scale storage tank	8 sites	1 site
Factory	9 sites (including 3 remediation sites)	1 site
Illegal dump site	2 sites	-
Other	16 sites (total of 14 parcels of land)	-

2. Investigation of gas stations and large storage tanks: The EPA has concluded a nationwide investigation of 800 gas stations over ten years old and 172 large storage tank facilities. Environmental pollution was discovered at 32 gas stations and eight large storage tanks. These sites are currently undergoing improvement measures. Three of the gas stations have already been cleaned up and removed from the list of control sites.
3. Investigations at potentially polluted abandoned factories: A systematic investigation was launched in 2004 over all abandoned factories. Using a quantification screening and assessment mechanism, the EPA first selected 15 factories susceptible to heavy levels of pollution. Of this first batch of abandoned factories, five sites were found to have soil or groundwater pollution at levels demanding control measures. Local competent authorities have publicly announced the names of those enterprises required to improve the pollution within a given time period according to SGPRAs regulations. A database has been established on abandoned factories nationwide and selected batches of factories will undergo successive investigations for soil and groundwater pollution.
4. Investigations at illegal dumps with probable soil and groundwater pollution: This project evaluates and investigates soil and groundwater pollution at sites where illegal dumping once occurred but has since been cleaned up. Investigations have already concluded at sites where hazardous industrial waste was once dumped, with pollution suspected at two sites. Local competent authorities have acted in accordance with the SGPRAs by demanding industry owners improve the polluted areas within a given deadline.
5. Groundwater quality investigation and monitoring: Regular monitoring is conducted at 431 regional monitoring wells, with an overall water quality pass rate of 90.4%. Monitoring wells are installed and tested based on site requirements to ensure site monitoring and control, and early warning of pollution. All information is entered into a groundwater quality database to provide related agencies with reference information for answering inquiries and developing policies.
6. Soil and groundwater pollution remediation fee collection: A total of NT\$700 million has been levied each year from manufacturers and importers of six categories of 125 chemical substances since November 2001.
7. Special investigations: A soil and groundwater investigation has been launched on 18 types of designated industries likely to engage in highly polluting activities upon transferring land ownership, setting up facilities or terminating operations. Already 124 investigations have been carried out from 1 January 2005 to 31 October 2005. An electronic soil test database has been established to facilitate follow-up tracking and control of soil pollution, and to increase administrative effectiveness.

Control Standards and Monitoring Criteria Reviewed

As for the future direction of soil



and groundwater pollution management, preliminary revisions will be made to control standards and monitoring criteria in the SGPR, based on previous plans and current status. Soil and groundwater stipulations in other countries were referred to in drawing up the current control standards and monitoring criteria. Existing regulations require that "industrial or union or environmental protection organizations must submit concrete scientific data to the EPA to be used as reference data for making revisions."

Drawing from other nations' experience, the SGPR will be revised to include health risk assessment mechanisms, and current control standards and monitoring criteria will be re-evaluated.

Drawing from other nations' experience, the Act will be revised to include health risk assessment mechanisms, and current control standards and monitoring criteria will be re-evaluated. Regarding revisions to control zone standards, farmland related zoning standards will be re-evaluated to include considerations for environmental hazards.

The development of a sound regulatory system involves two main areas of work:

Establish regulations: Since the promulgation of the SGPR on 2 February 2000, already 10 ordinances and 17 administrative rules have been drafted.

Revise draft plans: There is still room for improvement since the SGPR and related regulations

have come into effect. Therefore revisions are being made to the following:

1. Soil and Groundwater Pollution Remediation Act

2. Soil and Groundwater Pollution Remediation Enforcement Rules

3. Regulations Governing the Preliminary Assessment of Soil and Groundwater Pollution Remediation Control Sites

4. Regulations Governing Collection of Soil and Groundwater Pollution Remediation Fees

Soil Remediation Risk Assessment Mechanism Established

The overall policy calls for the establishment of a sound regulatory system and an integrated groundwater monitoring system. In addition to working toward this end, the SGPRFMB is working on the following tasks:

1. Establish a locally adapted risk assessment mechanism

Pollution site management in many countries (including the U.K., U.S., Japan and Germany) is such that remediation strategy is first determined based on risk assessment and then executed. To coordinate with international trends and obtain more effective remediation results, the EPA is drawing up a localized risk assessment mechanism. Investigations into site environment, human health exposure, and pollution status help to calculate what levels of pollution the human body can handle. After factoring in toxic management data, the resulting scientific data can be used to determine potential cancer rates, and whether the pollution will directly harm human health. Remediation strategies are then analyzed to find the most cost-effective solution and ensure sustainable use of

resources.

2. Establish reuse and restoration system for polluted land

Review system for improvement and reuse of seriously polluted farmland, plan land reuse procedures for remediation sites, and establish remediation sites; establish system for reuse of development-related land; establish incentive measures for soil and groundwater pollution remediation sites; establish a land finance insurance system; utilize and restore land.

3. Enhance administrative professional expertise and remediation technology

Regularly hold soil and groundwater related special training courses; conduct training and seminars on sampling technology, testing and analysis quality control and quality management, pollutant properties and method of spreading, remediation technology, and regulations; participate in international seminars and research foreign pollution site remediation experience; upgrade remediation technology and invite domestic and foreign experts to lecture on latest developments in remediation technology; hold open forums and special topic seminars.

4. Draft the "Taiwan Soil and Groundwater Pollution Prevention and Remediation Promotion Plan": A concerted effort among ministries and local governments, this plan will address soil pollution prevention, investigation, remediation and restoration and reuse measures for various types of land uses including farmland, factories, industrial parks, gas stations, storage tanks, landfills, illegal dumping grounds, and military facilities. The plan will consider including these measures into comprehensive policy to increase the effectiveness of soil pollution remediation promotion work.

Air Quality

New Dioxin Control Standards for Ash from Steel Smelters

On 12 October 2005, the EPA promulgated the Dioxin Controls and Emission Standards for Ash from High-Temperature Steel Smelting Facilities. This calls for tighter controls on dioxin emissions during the recovery of valuable metals in ash from high-temperature steel smelting electric arc furnaces.

Four standards have been established to reinforce controls on dioxin emissions from stationary pollution sources. These are *Waste Incinerator Dioxin Controls and Emission Standards* (廢棄物焚化爐戴奧辛管制及排放標準), *Medium and Small Scale Waste Incinerator Dioxin Controls and Emission Standards*, (中小型廢棄物焚化爐戴奧辛管制及排放標準), *Steel Industry Electric Arc Furnace Dioxin Controls and Emission Standards* (煉鋼業電弧爐戴奧辛管制及排放標準), and *Steel Industry Sintering Plant Dioxin Controls and Emission Standards* (鋼鐵業燒結工場戴奧辛管制及排放標準). On 12 October 2005, the EPA further promulgated the *Dioxin Controls and Emission Standards for Ash from High-Temperature Steel Smelting Facilities* (鋼鐵業集塵灰高溫冶煉設施戴奧辛管制及排放標準). Together these five standards put the main sources of dioxin emissions—an estimated 89% of the nation's total dioxin emissions—under legal controls.

The *Dioxin Controls and Emission Standards for Ash from High-Temperature Steel Smelting Facilities*, stipulates that ash smelting facilities newly installed as of 12 October 2005 must meet an emission standard of 0.4 ng I-TEQ/Nm³. A two-phased buffer period is provided for factories to improve dioxin emissions of existing high-temperature ash smelting facilities. The first phase begins on 12 October 2005 with a dioxin

emission standard of 9 ng I-TEQ/Nm³. The second phase begins on 1 September 2006, with a tighter standard of 1 ng I-TEQ/Nm³. Ash from high-temperature smelting plants is also required to undergo regularly scheduled biannual testing for dioxin emissions. Test results must be reported to their local environmental protection bureau (EPB).

The EPA indicates that these standards were determined based on targets attainable by current international best available control technology (BACT). At present only Japan, Germany and France have required local governments to set dioxin emission control standards for the steel-making industry. Japan set dioxin emission standards at 10 ng I-TEQ/Nm³ in 2002 for existing smelting facilities, and at 1 ng I-TEQ/Nm³

in 2000 for new facilities. Germany has the strictest standards, announcing in 2002 that all steel smelting facilities should abide by a 0.4 ng I-TEQ/Nm³ standard by year 2007. In France, a local government has set a requirement for the company RECYTECH S.A., to comply with a 0.5 ng I-TEQ/Nm³ emission standard or ensure total annual emissions are lower than 0.3 TEQ. The EPA's new standard of 0.4 ng I-TEQ/Nm³ is the world's strictest standard so far. The second phase standard for existing plants (to take effect in 1 September 2006) is ten times stricter than that of Japan.

Taiwan Steel Union Co. Ltd.'s (TSU) dioxin emissions are the focus of this emission standard. The EPA will reinforce testing and first verify that TSU's dioxin emission improvement measures are able to meet the set standards before allowing TSU to resume operations. After operations are resumed, the EPA will ask the Changhua County EPB and the EPA's central region Bureau of Environmental Inspection to reinforce inspections and ensure dioxin emissions conform with standards so citizens can rest assured.

EIA

Taipei-Yilan Freeway Pinglin Interchange Issue Resolved

There is finally light at the end of the tunnel regarding the debate over access to the Shihding-Pinglin section of the new Taipei-Yilan Freeway under construction. The original method of total quantity control which would allow vehicles to enter downtown Pinglin via the Traffic Control Center Exclusive Interchange will be immediately discontinued. Only public service vehicles and local residents will be allowed to use the Exclusive Interchange.

The EPA convened an environmental impact assessment review committee meeting on 27 October 2005. The meeting discussed the "Environmental Impact As-

essment Report and Response Policy on Vehicle Access Control in the Shihding-Pinglin Section of the Taipei-Yilan Freeway" proposed by the National Expressway Engineer-

ing Bureau (NEEB), Ministry of Transportation and Communications (MOTC). It was concluded that the original plan to allow no more than 4,000 cars/day into downtown Pinglin via the Pinglin Traffic Control Center Exclusive Interchange should be terminated. The restriction will not apply to public service vehicles and local residents. For the time being, the completed section of road will continue to serve traffic to and from Taipei and Yilan. However, there should be effective means to prevent non-local vehicles from using this road to enter Pinglin.

The environmental impact assessment report and response reviewed during the discussion pertain to the present situation, before all lanes on the highway are opened to all vehicles. The MOTC adopted a multi-phased plan to allow cars to access the Shihding-Pinglin section. Based on monitoring results, however, the EPA has determined that this plan does not accord with prior environmental impact conclusions and the MOTC's former promises. NEEB was therefore asked to submit the appropriate documents called for in Articles 18 and 29 of the *Environmental Impact Assessment Act* (環境影響評估法). A special taskforce convened two meetings on 4 and 26 October 2005 regarding these documents, and the Environmental Impact Assessment Review Committee engaged in a final round of discussion on 27 October 2005.

The review committee unanimously agreed that NEEB's move to implement a multi-phased vehicle access plan clearly violates their original environmental impact pledge and the agency should be strictly reprimanded for ignoring environmental protection interests. Considering the inadequacies in the EIA report, yet also considering that greater restraints are applied on the developer just two to three

months before all lanes are opened up, a resolution was made to require the developer to abide by the following:

1. For the time being, the completed section of road will continue to serve traffic to and from Taipei and Yilan. However, there should be effective means to prevent non-local vehicles from using this road to enter Pinglin.
2. Terminate the current method of entrusting a security company to conduct total quantity control, in theory allowing no more than 4000 vehicles per day into downtown Pinglin via the Traffic Control Center Exclusive Interchange. Reasons for termination of this

method are due to the security company's lack of legal authority over the public, loopholes in environmental monitoring and control methods, as well as other reasons to suspect negative environmental impacts.

3. Public service vehicles and local residents are still allowed to use the Pinglin Traffic Control Center Exclusive Interchange.
4. Environmental monitoring and impacts since the opening up of access routes, as well as the discrepancy in information submitted by Taipei City Government and the developer, should be cleared up within a month. A review will be made of the environmental impact discrepancy analysis report.

Environmental Sanitation

EPA Conducts Bird Flu Prevention Drill

With international news of avian influenza in the air, the EPA has taken measures to respond to a potential outbreak through the establishment of an avian flu prevention and response mechanism. The EPA also conducted a nationwide avian flu prevention drill with around 600 participating personnel.

EPA Minister Chang Kow-lung (張國龍) convened a meeting devoted to avian flu prevention and response measures in preparation for a probable future outbreak of a new strain of the avian flu. A concrete directive was made, stipulating that once response measures begin, the EPA should be prepared to activate a response mechanism at an instant's notice.

The EPA invited the Council of Agriculture (COA) and the Department of Health (DOH) to participate in a nationwide avian flu emergency response drill for environmental agencies at Singang Park, Singang Township (新港鄉), Chiayi County on 25

October 2005. The drill gave the EPA a chance to gain practical experience in coordinating efforts with other ministries. It also supplemented information on personal protection measures as a reference for drill participants and for the time when an actual response is required.

Over 600 staff members from various environmental protection and health agencies around the nation participated in this large-scale avian flu epidemic prevention drill. EPA Deputy Minister Lin Ta-hsiung stressed that time is of the essence in preventing this epidemic. Time is crucial in the research and development of new medicines and preparation of prevention work—environ-

mental agencies' best weapon in the fight against the avian flu. The epidemic prevention drill involved a series of preparatory stages, including preparing materials, information and personnel; emergency response at bird-raising factories, handling bird carcasses and waste disposal; and stockpiling environmental protection agents at interim handling facilities. The drill also practiced personal protection of staff during recovery stage procedures. Concrete procedures were rehearsed for each stage of the drill so that county/city government level staff fully understood proper procedures and epidemic prevention concepts.

The EPA indicates that division of responsibility in avian flu epidemic prevention work is such that agriculture agencies handle prevention at the level of the affected birds, health agencies are responsible for preventing the epidemic, and environmental protection agencies are primarily responsible for the disposal of medical waste. The EPA has already listed medical waste disposal as its focal work in responding to the avian flu epidemic. The EPA has also prepared plans and strategies for when the outbreak occurs, authorizing local environmental protection agencies to

directly and promptly report on the designated website and make all necessary purchases and auditing of protective equipment.

In strengthening the training of environmental protection personnel, the EPA has compiled a brief manual on environmental protection agencies' operating procedures in responding to the avian flu. This manual was sent to local EPBs, which are responsible for distributing it to frontline

environmental protection staff. In addition, the EPA has planned three lectures in northern, central and southern Taiwan regarding environmental agencies' epidemic prevention work. The EPA has also assisted the DOH in printing a flyer on personal protection measures, which will strengthen the personal protection of all levels of environmental protection staff.

Water Quality

Shipwreck Off Taoyuan Coast Activates Emergency Response Mechanism

On the morning of 2 November 2005, the EPA contracted a National Taiwan Ocean University ship to use sonar to detect the location of the sunken Korean "Samho Brother" chemical tanker. Results confirmed the vessel has already tipped over from its original position on the ocean floor. The investigation reports were communicated to the shipowner's representative and they have been requested to immediately submit a plan to remove the vessel.

On the morning of 10 October 2005, the Korean chemical tanker, Samho Brother, capsized off the coast of Taoyuan after collision with another ship. An exploration by the Ministry of

National Defense (MND) on 27 October 2005 revealed that ocean water has been seeping through the ship's broken hull due to a prior bombing mission unsuccessfully conducted by the MND. On 30 October the EPA arranged for the National Airborne Service Corps, Ministry of the Interior, carry out two aerial investigations, during which it was found that the vessel had already sunk to the ocean floor.

On the same day, EPA Minister Chang Kow-lung (張國龍) and Deputy Ministers Tsay Ting-Kuay (蔡丁貴) and Lin Da-hsiung (林達雄) went to the Nanliao (南寮) onsite response center. Examination of onsite investigation photos determined that the chemical tanker was still in its original location. The shipowner's representatives were asked to confirm the location and status of the



Personnel practice disposal of infected bird carcasses during epidemic prevention drill.

downed ship as well as submit plans for removing the ship so that it would not impact maritime traffic or the local fishing industry.

The EPA states that from 31 October to 1 November, the wind and waves had not yet subsided, and maritime conditions were not conducive to investigating the submerged vessel. As soon as the wind and waves had died down on the morning of 2 November, Ocean University's vessel "Researcher No.2" was arranged to probe the ship's hull and monitor the ocean water and air nearby, as well as survey nearby fishing resources. Results of this investigation showed that the ship had already capsized and sunk to the ocean floor about nine nautical miles off the coast of Nanliao Harbor (南寮漁港) in Hsinchu County. There was no trace of benzene in the air at the site and benzene concentrations in the ocean water is still undergoing analysis. However the team discovered a 15-meter wide strip of oil extending in a path two to three nautical miles long. The shipowner's representative was notified and asked to immediately begin oil clean-up work.

The EPA added that although the ship is estimated to have remained in the same spot, Coast Guard Administration ships are monitoring the area and issuing warnings. Further verification of its position was thus required out of concern for the safety of nearby ships and the fishing industry. Researcher No.2 verified the sunken ship's location on the second day and on the third day it used precision instruments to verify the ship's position on the ocean floor. This information will help the shipowner and related agencies in researching follow-up measures.

The EPA has notified the shipowner's representative of the ship's position, and the shipowner's representative is actively negotiating with foreign shipwreck salvage

experts to plan the next steps for removing the ship. After the plan is submitted, the EPA will invite related research groups to carry out follow-up work.

General Policy

President Visits Biodiesel Demonstration Plant

While visiting the nation's first biodiesel demonstration plant, President Chen said that Taiwan has long yearned to be self-sufficient in energy. Chen believes that biodiesel production is a first step toward increasing the nation's capacity to generate renewable energy.

Accompanied by Council of Agriculture Minister Lee Ching-lung (李金龍) and Chiayi County Commissioner Chen Ming-wen (陳明文), President Chen visited Taiwan New Japan Chemical Corp. (Taiwan NJC Corp.) biodiesel demonstration plant at Minhsiung Industrial Park in Chiayi County on 13 October 2005. The officials received a warm welcome from Nice Group President Chen Jhe-fang (陳哲芳) and Taiwan NJC Corp. General Manager Jhang Jhih-min (張志毓).

With assistance from both the Bureau of Energy, MOEA and the Energy Resource Institute, ITRI, Taiwan NJC Corp.—a subsidiary of Nice Group—has developed the nation's first biodiesel demonstration system. The plant converts animal and vegetable oils into diesel fuel, marking a new milestone in renewable energy technology in Taiwan.

President Chen stated that Taiwan NJC Corp. has built the nation's first biodiesel demonstration plant, which converts waste vegetable oil and plants with high oil content such as soybean, canola and sunflowers, into diesel fuel. With a production output of 3,000 tonnes per year, the demonstration plant is dubbed Taiwan's first "oil field" for biomass energy. It also signifies one of Taiwan's first steps

toward increasing energy self-sufficiency. Some regard biodiesel as a "green gold especially suited to Taiwan, where over 240,000 hectares of farmland are fallowed each year during the first and second farming seasons. Following costs the government over NT\$11.8 billion in subsidies to keep farmers alive. If these farmlands were used to produce high oil content crops, they could generate as much as 250,000 KLOE (kiloliters oil equivalent) of biofuel.

President Chen explained that while the combustion properties of biodiesel are similar to that of fossil fuel diesel, biodiesel has the advantage of being biodegradable and non-toxic. It can be directly substituted for fossil fuel diesel in standard diesel engines, resulting in less air pollution. Many countries have long begun to focus on applications of this renewable clean energy. Even oil-rich America is strongly promoting biodiesel, and there is no reason for Taiwan to hold back on this opportunity.

As over 95% of Taiwan's energy is imported, inflating oil prices have an immediate impact on economic growth and the price stability of commodities. President Chen encourages all circles to adopt a more forward-looking vision and holistic view by picking up the pace in adjusting Taiwan's energy structure

and actively raising the nation's self-sufficiency in energy.

Taiwan's switch to biomass and other renewable energy sources can also help reduce global CO₂ levels and the greenhouse effect.

President Chen expressed that although Taiwan is far behind other countries in terms of developing

biomass energy sources, we also hold significant advantages that could help us take the lead.

Through citizen support and perseverance, Taiwan could be on its way toward becoming a cleaner, more efficient, and more sustainable nation.

asures are also being taken to resolve this problem:

- (1) Increase penalties: By-weight standard regulations will be implemented, with the minimum penalty increased to over NT\$150,000. The fee shall be increased by the number of times the factory is found illegally piping effluent within one year.
- (2) Inspect rainwater drainage discharge points: Each environmental agency is asked to inspect and sample water at the discharge points of rainwater drainages. Industrial parks are advised to establish daytime-only interception facilities at rainwater drainages where illegal effluent discharge frequently occurs.
- (3) Entrust pollution verification: Environmental agencies are often unable to investigate reports immediately upon notification of illegal effluent. The EPA will revise regulations to stipulate that the responsibility of verifying pollution should be the industrial park management organization. This will also benefit its inspection rights as stated in the Water Pollution Control Act.
- (4) Increase monitoring duties: The EPA has drawn up regulations requiring dodgy companies to install continuous water quality monitoring and monitoring systems on major units, as well as link up with the local environmental protection agency.
- (5) Tighten permit reviews: When applying for related permits, companies on record for illegal piping of effluent are required to first evaluate the function of treatment equipment and ensure that it is able to treat effluent properly, before discharge permits will be approved.

Water Quality

Effluent Found in Rainwater Drainages at 30% of Industrial Parks

The EPA carried out a special investigation of industrial park sewerages from January to August 2005 to find that 40% of factories have been punished for discreetly bypassing effluent into sewers. An evaluation of industrial park management shows that 15 out of 49 industrial parks are not properly managing their rainwater drainages, highlighting the seriousness of the problem of illegal discharge.

The EPA conducted an investigation of 3,559 (factory-times) wastewater treatment plants and industrial park factories from January to August 2005. The investigation resulted in 104 penalizations, 25 of which were joint wastewater treatment plants. The most penalties were given to Yongan Industrial Park and Jhongli Industrial Park. Among the other 79 penalties, most were given to factories in industrial parks in Gueishan (龜山, Taoyuan County), Dayuan (大園, Taoyuan County), Linhai (臨海, Kaohsiung County), Renda (仁大, Kaohsiung County), Douliu (斗六, Yunlin County), and Hsinchu County, each receiving more than five penalties.

Looking into the cause for such a high penalty rate, 53% of penalties were due to violations of effluent standards, and 40% of penalties were due to deceitful bypassing of waste into rainwater drainages. Widespread failure to abide by effluent standards and furtive discharging of effluent reveal serious problems with water pollution control at industrial parks.

Results of this year's onsite audits, sampling and analysis of 49 industrial parks show that wastewater treatment plants at only five industrial parks were relatively unsatisfactory in terms of overall operation and maintenance. However, 15 parks (about 30%) were found to have poor sewerage system management or suspected pollution in rainwater drainages. Out of over ten industrial parks including the Linkou 2nd and Linkou 3rd, illegal bypassing of effluent into rainwater drainages was discovered during onsite audits of four parks (Pingjheng, Taichung, Cyuansing and Guanghua), revealing deficient management of rainwater drainages in industrial parks.

The EPA hopes that management organizations at each industrial park squarely face the pollution problems presented by illegal piping of effluent into rainwater drainages. They have been asked to cooperate with environmental protection agencies by tracking down those responsible for foul conduct. The following five mea-

Environmental Information

Environmental Database Search Interface Now in English

The EPA has recently completed an environmental database with English search interface allowing international friends to search the EPA's website for statistical data on air, water, soil, waste, and recycling, as well as English abstracts of special reports.

On 30 October 2005, the EPA announced the completion of the environmental database with English search interface. This service allows international friends to directly enter English key words when searching for environmental data in Taiwan. The EPA indicates that the English search interface is helpful in terms of maintaining environmental data and staying abreast of international trends. It also helps international friends stay tuned to the state of Taiwan's environmental quality and reduces the chances for international organizations to cite erroneous data.

The EPA points out that from 2002 it began working on the establishment of an environmental database. This involved gathering environmental data nationwide so that citizens can conveniently access all data online and learn about their neighborhoods' air

quality, water quality, motorbike exhaust testing stations, and other environmental information. The service also includes an electronic map with data and symbols to interpret the state of the environment. The database features a wealth of data including an environmental lexicon, environmental statistics, reports on special projects in the past, forums and records of public hearings, foreign visits, and environmental news.

Foreigners are invited to link onto <http://edb.epa.gov.tw/eng> and search away. To provide citizens with more environmental information on their living environment, the EPA is now integrating the environmental quality database with GIS, allowing users to search for information on local environmental quality based on designated geographical locations.

Environmental Protection Administration Executive Yuan, R.O.C.
Environmental Protection Data In Taiwan

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Introduction

Web Structure

To provide a platform for obtaining more environmental information, EPA has integrated all data on the "Environmental Protection Data in Taiwan" Website for a more convenient access. All information is separated into two parts: "Environmental Quality Information" and "research report". You are welcomed to visit all of them.

Part I: Environmental Quality Information
The relevant environmental quality information database is provided in 7 categories: air quality, noise quality, water quality, soil, waste, recycling and others. You may check the quality of your surroundings and related analysis by clicking the preferred subcategories.

Part II: Research Report
In research report you may search for a research report and download the file that was made by TAIWAN EPA.

Environmental database English search interface

News Briefs

Green Mark Criteria Revised to Suit Integrated Labeling Plan

In response to the National Council for Sustainable Development's integrated labeling plan, on 28 October 2005 the EPA announced revisions to Green Mark criteria for the following nine items: household refrigerators, washing machines, dehumidifiers, hand-held hair dryers, electric clothes dryers, fluorescent light tubes, dual-flush toilets, printers, and monitors. Revisions were made due to overlapping criteria for items in Green Mark, and energy/water efficiency labeling programs. Additional revisions were made to Green Mark criteria for printers and monitors due to requirements on electricity consumption and dust, ozone, sensor light hazardous materials restrictions, internal batteries, mercury content restrictions and plastic materials requirements. The above revised criteria will take effect six months after they are announced.

Taiwan's Green GDP Grew NT\$68.6 bn in 2003

The Council for Economic Planning and Development (CEPD) announced on 1 November 2005 that the service industry accounted for a record high of over 70% of the GDP in the first half of 2005. This shows that benefits of Taiwan's economic structural adjustment are continually emerging, with a trend toward "light, thin, short, and small" and "environmentally sound" development. The CEPD highlighted observations of industrialized nations' experience, showing that GDP growth tends to taper off when economic development reaches a mature stage.

Taiwan's Green GDP in 2003 reached NT\$8,647 billion, up NT\$68.6 billion from 2002. This shows that consumption of Taiwan's ecological and environmental resources is slowing down. At the same time, pressure on the environment due to consumption of resources by industrial development has diminished. These trends should allow the economy to gradually steer in a healthier direction.

Environmental Quality Monitoring

CEPD Approves Environmental Quality Monitoring Development Plan

During a recent assembly, the Council for Economic Planning and Development approved the "Environmental Quality Monitoring Development Plan" proposed by the EPA and stressed that the plan should focus on an environmental resource information system and database that adequately integrates the national GIS's space planning data. The plan should also consider a rent-operate transfer (ROT) format and encourage private participation in updating, operating and maintaining the monitoring station network.

During its 1227th assembly on 17 October 2005, the Council for Economic Planning and Development (CEPD), Executive Yuan discussed and approved of the Environmental Quality Monitoring Development Plan proposed by the EPA.

The plan will take effect from 2006 to 2010 and concentrate on the following five areas: 1) maintaining the operation of a comprehensive air quality monitoring station network, 2) improving environmental monitoring and testing facilities, 3) strengthening environmental monitoring and staying abreast of international trends, 4) integrating the establishment of a national environmental water quality monitoring and information center, and 5) unifying the envi-

ronmental resource information system and database.

The plan objectives include:

- 1) Strengthen the 76 air quality monitoring station operations and ensure data usability reaches at least 90%; complete construction of the Mt. Lulin Station and refurbishing of the northern particulate matter supersite.
- 2) Prepare 167 sets of noise and ionizing radiation monitoring equipment and refurbish 39 sets of environmental analysis equipment.
- 3) Actively participate in international monitoring exchanges; incorporate Taiwan's four stations into the

international monitoring station network; develop long-range monitoring.

- 4) Fortify 100,000 sets of environmental water body water quality monitoring information for 6,000 site-times.
- 5) Integrate the environmental information system and environmental database; support environmental protection policies and international exchange platforms.

The main points of the CEPD's conclusion were that the environmental resource information system and database should adequately integrate the nation's other related environmental information, especially including space design information in the national geographic information system. The CEPD pointed out that all levels of environmental protection agencies currently contract most environmental monitoring services. Now that infrastructure is already established, the EPA is asked to carefully consider a ROT format for follow-up updating, operation and maintenance of the monitoring website. Apart from facilities that must be operated by the EPA itself, private participation should be encouraged for website updating and operation.

News Briefs

Mercury Dry Cell Batteries Restricted from July 2006

On 5 October 2005, the EPA made a second preannouncement of a regulation to restrict production, import and sale of dry batteries. Regulations in the first preannounced draft regarding "examine and review in batches" and "vendors should keep verification documents on hand at all times" were deleted. The EPA also added that designated battery manufacturers and importers must prominently display confirmation document

numbers on batteries and packaging to verify mercury content is under 5ppm, so that it is easy for shoppers to identify. Production of batteries containing mercury is being phased out as alkaline manganese and manganese-zinc batteries are currently more widely used, and non-mercury production technology is already mature. This announcement stipulates manufacturers or importers should submit permits verifying mercury content is below 5ppm to the EPA for confirmation before manufacturing or importing batteries. To effectively control smug-

gling of substandard quality batteries, vendors may not sell batteries that haven't been confirmed as designated batteries by the EPA. To allow ample preparation time for related industries, this regulation will take effect on 1 July 2006.

EPA to Ban Use of Mercury in Thermometers

To reduce the harm caused by the spread of mercury in the environment, the EPA will prohibit the use of mercury in thermometers. The EPA points out that many countries have recently

adopted strict control measures to reduce the use of mercury. The US and EU have decided to let mercury thermometers disappear from the market entirely. Domestic mercury use is most widespread in thermometers and blood pressure meters, Careless use of thermometers often leads to breakage and spilled mercury, resulting in immediate environmental pollution. After entering water and transforming into toxic com

Clampdown on Illegal Discharge of Effluent

Sparing no effort to protect river water quality, environmental protection agencies detected 221 illegally installed discharge pipes along rivers throughout the nation during an investigation from January to the end of July this year. The EPA states that in order to put an end to illegal discharge of wastewater and to raise river water quality, it has already requested local environmental agencies to reinforce investigation of illegally installed pipes and off-hours discharge of effluent. Such conduct is strictly prohibited and justice shall be carried out. Certain disreputable businesses have shunned environmental responsibility in order to reduce expenses on wastewater treatment by burying complicated networks of illegal effluent pipes underground, or discharging large volumes of wastewater during evening hours or torrential rains. For example, in Kaohsiung County's Agongdian River (阿公店溪) 12 hid-

den discharge pipes from five metal surfacing treatment and electroplating factories were discovered this year from March to July. The effluent from these pipes had turned the river water red. After removing the pipes the river returned to a normal color. Since the removal of three hidden discharge pipes found in three areas along the Puzih River (朴子溪) in Chiayi County from April to July, the water quality has improved 50% compared to last year.

Hazardous Industrial Waste Landfills Must Report Online from October 2005

To effectively control waste clearance and disposal at hazardous industrial waste landfills, and prevent related secondary pollution, the

EPA has mandated that as of 1 October 2005 enterprises must report waste flow online when clearing or disposing of waste at hazardous industrial waste landfills. Other entities required to report waste flow online include government clean-up crews, incinerators, and landfills, as well as organizations authorized to receive hazardous industrial waste for clearance, disposal, intermediate treatment, reuse, or final disposal. The EPA will review the effectiveness of this system in the beginning of 2006. The online report system will be expanded to require general industrial waste and general waste landfills to report waste flow upon clearance and disposal of waste. This will ensure comprehensive control and proper disposal at all waste landfills.



Industrial Waste Control Center Website

2005 APEC Recycling Meeting Held in Taiwan

The 2005 APEC Recycling Meeting was held in Taipei on 13~14 October 2005, drawing together experts from Canada, Japan, Mexico, New Zealand, Thailand and Taiwan. The meeting was held as the wrap-up meeting to Japan's APEC plan, "Capacity Building for Recycling-Based Economy in APEC." Taiwan was invited to be the host country this year. As waste recycling has a wide impact on many levels, APEC is starting to realize the implications of this issue on future socioeconomic development. The plan has facilitated understanding of the status of waste recycling in APEC member economies. Participants at the meet-

ing established a communication network and exchanged each country's implementation experi-

ences and views on the problems and challenges of resource recycling, successful examples of

Activities



2005 APEC Recycling Meeting Held in Taiwan

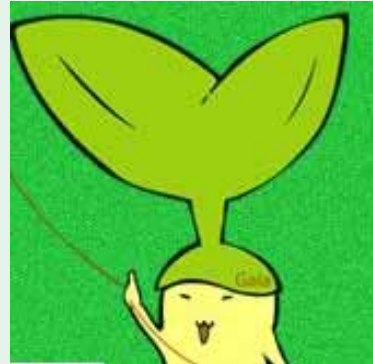
Activities

recycling, and designing capacity building workshops. After the meeting, attending experts from APEC member economies met with EPA Minister Chang Kow-lung and domestic scholars and experts to exchange views on how to attain the goal of "zero waste." They also had a chance to visit recycling plants for end-of-life household electric products and motorbikes.

Environmental DIY Creativity Expo Kicks Off

Working toward the Executive Yuan's concept of building a "healthy and sustainable Taiwan," the EPA is holding an environmental creativity expo in northern, central, and southern Taiwan from 28 October to 20 November. Special displays showcase the EPA's achievements over the years, and winning ideas from a national environmental creativity contest. There are also over 40 environmental businesses with exhibits allowing people to see some of the most unique and creative green products on the market. The expo also features the green home of the mystical Earth-creature "Gaia," where many of the green businesses' products are placed in the home environment. There are several interactive environmental DIY activities as well, teaching people to make dolls out of plastic bottles, art from corrugated cardboard, and soap from soapberries (a local tree). Attendees are encouraged to take some time

out for these fun environmental activities.



Meet "Gaia," the mascot for the "2005 Imagination Exhibition of Environmental Protection"



EPA Deputy Minister Tsay Ting-kuay (center) presides over opening ceremony

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