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Feature Column

First Year of Sustainability in Review

Since President Chen Shui-bian declared 2003 as the First Year of Sustainable Development two years ago, local governments have been busy planning sustainable development action plans with assistance from the National Council for Sustainable Development, Executive Yuan. Some of the groundbreaking milestones that have been achieved during the First Year of Sustainable Development include the Taiwan Declaration of Sustainable Development, the establishment of the Taiwan Sustainable Development Indicator System, and the first year of annual awards for peak performance in promoting sustainable development.

Assisting Localities to Draft Sustainable Development Action Plans

In 1997, the National Council for Sustainable Development (NCSD) under the Executive Yuan was organized on a provisional basis to handle tasks at hand. After the *Basic Environmental Act*（環境基本法） was passed in November 2002, Article 29 of this act came into play, stipulating that the Executive Yuan shall install the NCSD with the authority to decide on policies pertaining to national sustainable development. This provided the legal backing to upgrade the standing of the NCSD from a provisional organization to a statutory council.

The NCSD issued the "Agenda 21—R.O.C. Sustainable Development Strategic Framework"（21世紀議程—中華民國永續發展策略綱領）in 2000. Working to comprehensively promote sustainable development, the NCSD Sustainable Vision Working Group then began assisting each county and city government to draft "County (City) Sustainable Development Action Plans" from July 2003. The first planning sessions included the participation of eleven counties and cities, including Taipei and Kaohsiung cities.

Already having designated 2003 as Taiwan's First Year of Sustainable Development, in October 2002 President Chen met with those governmental and non-governmental organizations that represented Taiwan at the Sustainable Develop-

The Executive Yuan's National Sustainable Development Network Global Information homepage.

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ment World Summit. During this meeting, President Chen recognized that due to Taiwan's limited resources, dense population, frequent natural disasters, and special international status in this era of globalization, the urgency has arisen for concrete action toward sustainable development so that future generations in Taiwan are able to forever sustain their livelihood on this beautiful island. Days later on October 19, President Chen presided over an indigenous peoples re-recognition ceremony, and responded to the indigenous community by announcing the year 2003 as Taiwan's First Year of Sustainable Development. Chen called on the entire citizenry regardless of ethnicity, profession, age, sex, or region, to join together in the common quest for sustainable development.

Given Taiwan's enormous population, limited natural resources, frequent natural disasters, and special international status, the quest for sustainable development is all the more urgent in Taiwan compared to other countries.

Taiwan Declaration of Sustainable Development

After the NCSD issued the National Sustainable Development Action Plan（國家永續發展行動計畫）in December 2002, it expressly drafted the "Taiwan Declaration on Sustainable Development"（台灣永續發展宣言）to arouse a higher consciousness of sustainable development among citizens and spur unified action toward sustainable development. The NCSD then called together the "Declaration Assembly for the First Year of Sustainable Development" on January 25, 2003. Recognizing that sustainable development relies on full citizen participation and hoping to incite awareness and action toward sustainable development, the NCSD invited representatives from all fields including local government, agriculture, labor, indigenous peoples, technology, industry, education, women, students, religious groups, media, and all organizations under the Executive Yuan to join in this "Declaration Assembly for the First Year of Sustainable Development."

The President and over 700 organization representatives were invited to the assembly. All parties jointly signed the Taiwan Declaration on Sustainable Development, and the declaration was made available for the public to sign via Internet on the National Sustainable Development Global Information Website (http://ww2.epa.gov.tw/nsdn). In addition to using this opportunity to spread the concepts of sustainable development at the ground level and in everyday life, this declaration was also directed to the international community, vowing to the world the commitment made by Taiwan's government and citizens to promote sustainable development. All citizens are called to sign onto this online declaration and join efforts toward sustainable development (please see EPM Vol. VI, Issue 2).

Establishing a Sustainable Development Indicator System

The UN announced the official UN Sustainable Development Indicator System in 2002. At this time, the Council for Economic Development and Planning—the convening authority for the NCSD's Sustainable Vision Working Group—immediately invited all related departments to organize the "Interdepartmental Working Group to Establish Sustainable Development Indicators." This body is responsible for selecting indicators that are significantly representative of sustainable development, based on the National Science Council-sponsored "Sustainable Taiwan Vision and Strategies Research Plan"（永續台灣的願景與策略研究計畫）. Experts, scholars and citizen groups were convened for discussion, and ideas from all fields were incorporated into the 42 indicators chosen for the National Sustainable Development Indicator System. These indicators were announced on June 5, 2003, the first national Environment Day since the promulgation of the *Basic Environmental Act*, making Taiwan the second country in the world (after Canada) to establish a sustainable development indicator system (please see EPM Vol. VI, Issue 6).

Taiwan's Sustainable Development Indicator System is based on a pressure-status-response (P-S-R) framework, in which indicators of the current status of environmental resources show the extent of environmental degradation or improvement; indicators of economic and social pressures show social structure and economic activities that exert pressure on the environment; and policy and systematic response indicators show the systematic responses to these environmental status and socioeconomic pressures in the quest for sustainable development. Additionally, given the fact that nearly 80% of Taiwan's population resides in urban areas, indicators are further classified into island and urban areas. The indicator categories are divided among six categories: ecology, environmental pollution, social pressure, economic pressure, system responses and urban sustainable development.

In order to allow sustainable development concepts to take firm hold among the populace and to attract full citizen participation, individuals and organizations are selected for model performance in promoting sustainable development. The NCSD held the first National Sustainable Development Performance Awards in November 2003, giving out awards in the areas of community sustainable development, sustainable education, industry sustainable development and action plan implementation. The theme of this year's awards is "Sowing the Seeds of Sustainability—Adding Momentum to Sustainable Development." All selections for 2003 have already been made and awards were given out by the end of March 2004.

Cornerstones of Sustainable Development: Environment, Economy, and Society

As stated in the Declaration, sustainable development is balanced upon the three cornerstones of environmental protection, economic development and social justice. Given Taiwan's enormous population, limited natural resources, frequent natural disasters, and special international status, the quest for sustainable development is all the more urgent in Taiwan compared to other countries. As for future prospects, the NCSD will continue to adhere to the Rio Declaration on Environment and Development made during the UN Earth Summit in 1992, as well as the Johannesburg Declaration on Sustainable Development made during the World Summit in 2002, in formulating sustainable development strategies and action plans. The NCSD also agrees with the international consensus to "think globally, act locally," focusing first on living environments, consumerism and business activities, and working at all levels from private to public, from the individual to the society, by taking concrete actions to comprehensively put sustainable development into practice. All efforts should be made with the intention of transforming Taiwan into a safe, healthy, comfortable, beautiful and sustainable living environment.

General Policy

ESTPs Slated for Taoyuan and Tainan Counties

Just behind the establishment of the first two Environmental Science and Technology Parks (ESTPs) in Kaohsiung and Hualien counties, locations for the third and fourth ESTPs have already been announced. The EPA completed the overall evaluation of potential park sites on March 23 and has decided to build the third and fourth ESTPs in Taoyuan and Tainan counties. A total of four ESTPs will be established in Taiwan.

The EPA is currently promoting the Environmental Science and Technology Park Plan to advance recycling and reuse practices, introduce environmental technology companies in Taiwan and spur on domestic research and innovation in the area of environmental production technology. This plan provides preferential treatment and reward incentives to companies willing to set up in the parks, as well as encourages participation from related local businesses. After the plan was ratified by the Executive Yuan in September 2002, all local governments eagerly began to vie for the bid to build the parks. Locations for the first two parks were decided on last year (2003), in Hualien County's Fenglin Development Zone（鳳林開發區） and Kaohsiung County's Benjhou Industrial Park（本洲工業區), respectively (please see EPM Vol. VI, Issues 1 and 2). The EPA announced in August 2003 that a second bidding would be held for the third and fourth ESTPs. Taoyuan County, Miaoli County, Taichung City and Tainan County came forth with tenders for this bid.

Local governments have demonstrated a keen response toward this plan, and the number of domestic and foreign firms that have eagerly shown willingness to set up operations in ESTPs during over a year of bidding has exceeded the anticipated goal of 60 companies. In light of recent signs that domestic industry is making a comeback, and considering development trends of the domestic and foreign environmental industry, it was decided that the plan would be upgraded to a larger scale to include four parks instead of only two. The Executive Yuan gave the nod to this revision on March 11, 2004, which will increase the total park area from 100 to 123 hectares and will raise the budget from NT$5.08 billion to NT$6.2 billion.

The decision for this second tender was made after the general appraisal session convened on March 23. The Taoyuan Science and Technology Industrial Zone（桃園科技工業區） in Taoyuan County was chosen primarily based on the fact that the county government already owns the land and the public infrastructure is already in place, as well as the fact that the county government already has long-term integrated plans for regional development. The Taoyuan Science and Technology Industrial Zone garnered overwhelming support as it fulfills

the need to set up a park in northern Taiwan, can integrate with neighboring industries and help enhance the overall success of the environmental technology field. As for Tainan County, backed by County Chief Su's colorful administrative concepts and vision for integrated local development, the county government showed outstanding performance and won the support of local representatives. This made a deep impression on the selection committee. Also, there is a great potential for newly introduced environmental industries to have a complementary effect on high-tech industries in the nearby Southern Taiwan Science Park (南部科學工業園區).

The Taoyuan County and Tainan County governments have been requested to finalize any revisions to their plans by April 26. The plans will then be ratified according to procedures after review by a steering committee. After park zone planning decisions have been made, infrastructure will be incrementally installed according to plans, firms will be invited, and plans to develop neighboring towns and countryside will come into play. For more information, please call 02-23117722 ext. 2640.

Soil & Ground Water

Guidelines to Improve Soil and Groundwater Pollution Control Sites

The EPA drafted the *Guidelines for Administering Improvements to Pollution Control Sites*, effective from January 1, 2004, to clarify ambiguities resulting from the differing control site management strategies in effect before and after the promulgation of the *Regulations Governing Preliminary Assessments of Soil and Groundwater Pollution Control Sites*. The new guidelines provide categorical administrative procedures to assist local competent authorities in managing control sites.

Since the promulgation of the *Soil and Groundwater Pollution Remediation Act* (土壤及地下水污染整治法) in February 2000, local environmental protection bureaus (EPBs) have already used legal means to require polluters to submit pollution control plans at announced pollution control sites. However, the enactment of the *Regulations Governing Preliminary Assessments of Soil and Groundwater Pollution Control Sites* (土壤污染控制場址初步評估辦法) three years later in May 2003, made it necessary for the EPA to clarify whether polluters should continue to submit or implement their own pollution control plans or instead have the local authorities carry out follow-up inspections and then list as remediation sites according to the newer *Regulations Governing Preliminary Assessments of Soil and Groundwater Pollution Control Sites*.

In response to the differing management strategies for each level of administering control sites stipulated before and after the promulgation of the *Regulations Governing Preliminary Assessments of Soil and Groundwater Pollution Control Sites*, the EPA has sought to provide local environmental agencies with clear-cut basis for law enforcement through the formulation of *Guidelines for Administering Improvements to Pollution Control Sites* (污染控制場址進行污染改善推動執行要點). Containing four articles, this new legislation has already been approved by competent authorities on December 6, 2003, and became effective on January 1, 2004.

Article 3 of the Guidelines stipulate that polluters should submit a pollution control plan for all pollution control sites announced after the *Regulations Governing Primary Assessments of Soil and Groundwater Pollution Control Sites* (hereafter referred to as the Regulations) came into effect on May 9, 2003, as well as for all sites announced before that time that had already begun adhering to the *Soil and Groundwater Pollution Remediation Act*. For those polluters who have not yet submitted pollution control plans or whose plans have not yet been approved, the local EPB should adhere to the following stipulations: 1) If, upon completing preliminary assessment of the control site, there is reason to believe that the pollution may seriously jeopardize public health and the public living environment, the EPB shall adhere to Article 11~2 of the Act and announce the site as a "pollution remediation site" after approval by the EPA. 2) Those pollution sites that have not been announced as remediation sites must adhere to Article 11~4 of the Act. 3) Depending on actual site conditions, the EPB should adhere to Article 13 and carry out the appropriate emergency response measures. 4) Article 10 of the Guidelines shall be applied to adopt and execute any other appropriate measures.

Article 4 of the Guidelines stipulates that sites that had already been announced as pollution control sites before the Regulations became effective, and for which the local EPB had already required the polluters to submit a pollution control plan which has already been approved, the EPB should adhere to the following measures:

1. Continue to implement the original pollution control plan and carry out regular review of implementation results.

2. Throughout implementation of pollution control plans, if the pollution is found to be jeopardizing safety or is extending beyond the anticipated range, emergency response measures should be taken according to Article 13 of the Act.

3. Throughout implementation of pollution control plans, if new evidence of new pollution is discovered, it should first be confirmed that it is unfeasible to control the pollution even by modifying the originally approved pollution control plan. In such a case, those sites that match the first condition stated in Article 2 of the Regulations should be reported by the local EPB to the EPA for review, after which it can be announced as a pollution remediation site.

4. If the end date of the EPB-approved implementation period for pollution control plans has already been reached without bringing soil and groundwater pollution concentrations below soil or groundwater pollution control standards, those sites that match the first condition stated in Article 2 of the Regulations should be reported by the local EPB to the EPA for review. They may then be announced as pollution remediation sites.

For more information, please call 02-2383-2389.

Soil & Groundwater

EPA Announces Three Pollution Remediation Sites

On March 19 this year, the EPA announced three pollution remediation control sites, namely, RCA's Taoyuan Plant, China Petrochemical Corp's Anshun Plant in Tainan and Chinese Petroleum Corp's Kaohsiung oil refinery plant P37 storage facility area. The original perpetrators or proprietors associated with these pollution incidents have been sought out and are held liable for remediation work. Land transfers or transactions are prohibited before remediation is completed.

According to the *Soil and Groundwater Pollution Remediation Act*（土壤及地下水污染整治法), promulgated in February 2000, the local environmental protection bureau (EPB) should require the local land administration authority to prohibit the proprietors of lands listed as remediation sites from engaging in any land transactions. On March 19, 2004, the EPA announced the following three locations as remediation sites: the Taiwan-US Radio Corporation of America (RCA)（台灣美國無線電公司）factory in Taoyuan, China Petrochemical Corp's Anshun plant in Tainan（中石化台南安順廠）and Chinese Petroleum Corp's（中油公司）Kaohsiung oil refinery plant P37 storage facility zone. All individuals responsible for the polluting activities are held liable for remediation work.

The EPA points out that a retroactive clause was adopted at the time of legislation, calling for the tracking down of those responsible for polluting activities or the implicated proprietors and requiring them to take responsibility for remediation measures. Specific articles of the Act forbid the responsible parties from making any developments or changes to the land before remediation is completed, and restrict the proprietors or polluters from handing the land over to another party or otherwise evading remediation responsibilities.

Of the three locations listed as control sites, the largest area is China Petrochemical Corp's Anshun Factory in Tainan and the nearby wasteland east of Road 2-9. The primary soil and groundwater contaminants here are dioxin and mercury. The factory shut down operations in June 1982, at which time all manufacture equipment was dismantled and the building was leveled. The only structure still remaining is one office building. The wasteland to the east of Road 2-9 is not in use, and is still under possession of China Petrochemical Corp. The site has been fenced off to prevent public access.

The site at the Taiwan-US RCA Taoyuan Plant covers eight hectares with primary contaminants being vinyl chloride, trichloroethylene and perchloroethylene organic compounds. The factory closed down in 1992 and the main factory buildings have been vacated while annexing structures have been taken down entirely. The Taoyuan County government listed the location as a pollution control site on April 26, 2002. The control site at Chinese Petroleum Corp's Kaohsiung oil refinery plant P37 storage facility area actually consists of four tanks P36, P37, P58 and P59. The main pollutants here are benzene and total petroleum hydrocarbons from fuel oil seepage.

The EPA has requested all local EPBs to adhere to Article 12 of the *Soil and Groundwater Pollution Remediation Act* concerning guidelines for pollution boundary investigations, environmental impact assessments and treatment level appraisals at remediation sites. Related follow-up measures are also stipulated in these enforcement rules.

Waste Management

Incinerator Audit and Evaluation Guidelines Revised

Aiming to bring the audit and evaluation of waste incinerators under one standardized system, the EPA has revised drafted guidelines for auditing and evaluating waste incinerators. In addition to including NGO representatives in the auditing and evaluation committee, the revision also requests local environmental protection bureaus to coordinate operations so that the incinerator audit and evaluation system has a more clear-cut basis for implementation.

To effectively manage operations at the nation's incineration plants, the EPA enacted the *Implementation Guidelines for Conducting Supervision Audits and Performance Evaluations of Operative Waste Incineration Plants*（已運轉垃圾焚化廠操作營運輔導查核及績效評鑑實施要點）on April 20, 2001 and further revised these guidelines on April 18, 2002. The Guidelines provide a standardized system for conducting supervision audits and performance evaluations on waste incinerators. In order to strengthen policy implementation and achieve the goals of the three-year action plan, which are to upgrade management and performance of waste incinerators, establish a new image for environmental protection facilities, and implement a "Three-Year Incinerator Transformation Plan," the EPA has recognized the need to review the Guidelines and provide a more categorical system for performing audits and evaluations of waste incinerators. Numerous meetings were convened to integrate previous years of administrative experience and discuss revisions to the Guidelines.

The draft revision covers eight points which focus on applicable targets, establishment of a "Waste Incinerator Audit and Evaluation Committee" and a "Secretarial Working Group," management methods, performance review methods, and methods for managing results and specifying tasks for local environmental protection bureaus (EPBs). As for the applicable facilities covered under the Guidelines, the former guidelines specify "domestic public and private municipal waste incinerators," which have been revised in scope to include "waste resource recycling (incineration) plants."

As for methods for organizing and managing incinerator audit and evaluation committees, the revised Guidelines provide a new definition and standard, specifying that the committee should first consult with the EPA and provide a statement as well as participate in on-site audit and evaluation work. The number of committee members has been raised from the original amount of 9~13 individuals to 15~19 individuals, which should include not only scholars, experts, and related organization representatives, but now should also include NGO representatives. At least two-thirds of all representatives should be scholars and experts.

As regards audit and evaluation methods, guideline number four pertaining to administrative organization has been revised to provide a legal basis for the EPA to entrust a juridical organization to enter into partnership or invest independently in the establishment of a secretarial working group responsible for administering audit and evaluation work. This is different from the past, when the EPA could only choose to either conduct audit and evaluation work itself or commission the work to another organization. The revised draft broadens audit and evaluation work content to include operations, maintenance and management. Furthermore, on-site audit and evaluation of incinerators must be carried out in both the first half and the latter half of each year on a regular basis. Unscheduled audits should also be conducted depending on actual needs.

The Department of Engineering presented this new draft to the board of competent authorities for discussion and approval on March 30, 2004. After the EPA Administrator gives the final nod of approval, local EPBs will be given notice to heed the revised Guidelines. For more information, please call 02-23117722 ext. 2530.

News Brief

Diesel Fuel Air Pollution Fees to Adopt Two-Tiered System

Encouraging industries to comply with requests to lower sulfur content of diesel fuel and reach the control target of 50ppmw sulfur content before the 2007 deadline, on March 17 the EPA held a public hearing to discuss a revision to air pollution fee rates. Fees for automobile diesel fuel have been categorized so that those below the standard of 50ppmw will have their air pollution fee rate reduced from NT$0.2/liter to NT$0.1/liter. This two-tiered fee rate system has been developed in response to an inflow of diesel passenger car imports from this year on and as a measure to encourage diesel product manufacturers to get a head start in providing low-sulfur diesel fuel that complies with the 50ppmw standard set for the year 2007. Those with sulfur content between 350ppmw and 50ppmw will continue to pay NT$0.2/liter, while those under 50ppmw will enjoy a reduced fee of NT$0.1/liter.

Air Quality

Dioxin Emission Controls Enhanced at Ore Sintering Plants

Dioxin is one of the persistent organic pollutants (POPs) currently under collaborative international control due to the grave danger it poses to human health. One of the most pressing issues for environmental protection authorities around the world is how to decrease dioxin emissions and prevent this pollutant from jeopardizing public health. In Taiwan, dioxin emission controls start with incinerators, and since 1997, the EPA has been announcing gradual dioxin controls and emission standards for municipal waste incinerators and medium- to small-scale waste incinerators. Since then, additional measures have been taken to strengthen dioxin emission controls, for example, requiring electric arc furnaces in the steel industry to implement dioxin emissions control standards in 2001.

This time dioxin emission controls will be expanded to include iron ore sintering plants in the steel making industry. Investigations of dioxin emissions records and emissions databases from the Taiwan region reveal that dioxin emission concentrations from individual domestic ore sintering plants are not significantly high compared to foreign monitoring data; however combined emissions throughout Taiwan puts the overall amount of dioxin emissions at relatively large levels compared to land area. Therefore it is vital that legal controls are instituted to reduce the risk of jeopardizing the environment with dioxin.

The EPA held a research discussion on the *Steel Industry Ore Sintering Plant Dioxin Control and Emission Standards (Draft)* （煉鋼業燒結工場戴奧辛管制及排放標準草案）on December 19, 2003. In addition to referring to foreign control standard values, health risk assessments, management control technology analysis and economic feasibility for related industries, suggestions made by discussion participants have also been incorporated into the draft standards, which were announced on March 22, 2004. The promulgation date of these draft standards will be announced after they have been ratified by the competent authorities.

The draft standards include nine articles, which apply primarily to emissions produced by ore sintering facilities in the steel industry during smelting, and target dioxin as the main pollutant under control. Different implementation dates and emission standards are specified for currently existing ore sintering plants and new ones. Existing plants refer to those plants that, before the promulgation date of the standards, had already completed construction, are in the process of construction, have already finalized bidding procedures, or have already been contracted out for construction. In contrast, new plants are defined as facilities built after the promulgation date, or existing facilities that have increased capacity for dioxin emissions due to renovation of facilities or any other structural or operative modifications.

Pollution source	Emission Standard (ng-TEQ/Nm^3)	Implementation Date
Existing ore-sintering plants	2.0	January 1, 2006
	1.0	January 1, 2008
New ore sintering plants	0.5	Promulgation date

Draft emission standards for ore sintering plants

For more information, please call 02-23117722 ext. 2770.

Water Quality

Monitoring of Fish Species Helps Assess Water Quality

To give the public a better understanding of Taiwan's unique river ecology and the current degree of pollution of our river's water quality, the EPA has recently developed a catchy "Do fish swim here?" survey to assess whether river water quality has already improved.

In recent years, many countries have already begun to place importance on the close relationship between water quality and fish ecology. Taiwan's river fish species are different from those of other countries, making it necessary for the EPA to compile data specific to Taiwan, which is drawn from ongoing investigations from 1993 on. The report provides details on the more than 200 spe-

cies of freshwater fish currently inhabiting Taiwan's rivers as well as each species' tolerance to pollution. Fifteen fish species have been selected and ranked under five categories to serve as indicators for river pollution. For example, Varicorhinus alticorpus is not tolerant to pollution and can only survive in clean water; therefore its presence indicates that the water has not been severely polluted. Conversely, the appearance of tilapia and Indo-Pacific tarpon means that river water quality has already been severely polluted.

Based on results of the EPA's two surveys last year on fish species inhabiting seven of Taiwan's rivers, it was found that the Dajia River (大甲溪) had the best water quality; the Wu River (烏溪), the Lanyang River (蘭陽溪), the Houlong River (後龍溪) and the Bajhang River (八掌溪) showed acceptable water quality; while the water quality of the Huangshan River (鳳山溪) and the Yanshui River (鹽水溪) showed room for improvement. The survey also discovered that the number of alien invasive fish species in Taiwan's rivers is on an upward trend.

EPA researchers found five species of alien invasive fish such as the Three-spot gourami at the Cianniao Bridge on the Yanshui River, the Beishih Bridge on the Houlong River, and the Dajia River Bridge on the Dajia River. Generally speaking, these exotic fish species have a greater ability to reproduce and adapt to polluted waters. Once their survival is established in local rivers, they gradually threaten the habitat of indigenous fish species such as the Zacco platypus (溪哥) and Acrossocheilus formosanus (石纜). The introduction of exotic fish species and their release into Taiwan's waters is an area that may require reinforced management by the relevant fishery authorities.

Fish species are large and easily visible animals within the aquatic ecosystem. Many countries therefore use the presence of certain fish species as biological indicators of whether rivers have been subject to long-term pollution. For example, one river management authority of England's Thames River often uses the return of the pollution-intolerant salmon in the Thames River as a biological indicator of successful river remediation projects. Researchers monitoring the results of successful remediation in the US Cuyahoga River and the Singapore River not only note improvements to water quality, but also consider the performance of river ecosystems, using fish as primary monitoring targets.

Previous investigation records show that Taiwan has at least 200 species of freshwater fish in its rivers. Some fish species have been subject to long periods of landlocked isolation and have evolved into endemic species unique to Taiwan, such as Varicorhinus alticorpus, Acrossocheilus formosanus, and Gobiobotia cheni (陳氏鰍鮀). Taiwan's favorable river environments have given rise to a diversity of fish species, which can serve as biological indicators of the extent of river water pollution. Therefore, while the EPA makes the best effort to improve river pollution through remediation projects, it also continues to target major rivers in carrying out monitoring and assessment of fish species. The establishment of a database of basic information on Taiwan's river ecology is currently underway and will serve as an important tool in measuring improvements made through remediation efforts.

Waste Management

Waste Lubricants to Be Removed from List of Controlled Items

In concert with plans to remove waste lubricant oils from the list of general waste mandatory recyclables from July 1, 2004, the EPA has already drawn up relevant measures to strengthen inspections and provide appropriate response against environmental pollution due to the arbitrary disposal of waste lubricants, when trading in their old motorbikes.

Ever since the EPA announced that waste lubricant oil should be recycled, only around 10% of all waste lubricants have entered the recycling systems established under the guidance of the EPA. This is due to the high reuse value of such oils, the maturation of domestic recycling technology, as well as active measures taken by domestic private enterprises to install recycling systems on their own. Based on research analysis results, a high proportion of industrial waste liquid or oil tank sludge is mixed in with much of the waste lubricant oil collected for recycling. Such impurities hamper the efficiency of recycling efforts. Therefore the EPA announced on June 13, 2003, that from July 1, 2004, waste lubricant oil will be removed from the list of controlled general waste items collected for mandatory recycling.

The EPA has already drafted a set of measures regarding the reuse of waste lubricant oil. In addition to negotiating with the Ministry of Economic Affairs to announce waste lubricant oil as a reusable industrial waste item, the EPA will soon invite relevant recycling organizations and administrative organizations to a briefing to notify enter-

prises of future methods for clearance and disposal of waste lubricant oils. The EPA will also assist enterprises to obtain the necessary licenses for clearance and disposal of waste lubricant oils according Articles 41 and 42 of the *Waste Disposal Act* (廢棄物清理法).

From July 1, 2004, waste lubricant oil generated by automobile maintenance factories that provide inspection services will classify as industrial waste. According to Article 28 of the *Waste Disposal Act*, enterprises should handle clearance and disposal of this waste item either by themselves or through a commissioned enterprise that is authorized to handle clearance and disposal work. Waste lubricant oil generated by all other automobile and motorbike maintenance service shops, however, is classified as general waste and shall be collected and disposed of according to Article 14 of the *Waste Disposal Act*, which stipulates that administrative organizations are responsible for clearance and should take the appropriate disposal measures. For non-household organizations that generate waste lubricant oil, the administrative organization can designate the appropriate clearance method and disposal site location.

The EPA emphasizes that waste lubricant oil has a high reuse value and therefore even if it is managed as an industrial waste in the future, no matter where it is generated, it is likely to be reused and therefore not create pollution problems. Therefore, the arbitrary dumping of waste lubricant oil is unlikely to occur in the future. The EPA will also reinforce inspections from July 1 to prevent environmental pollution due to the arbitrary dumping of waste lubricant oil.

For more information, please call 02-23117722 ext. 2640.

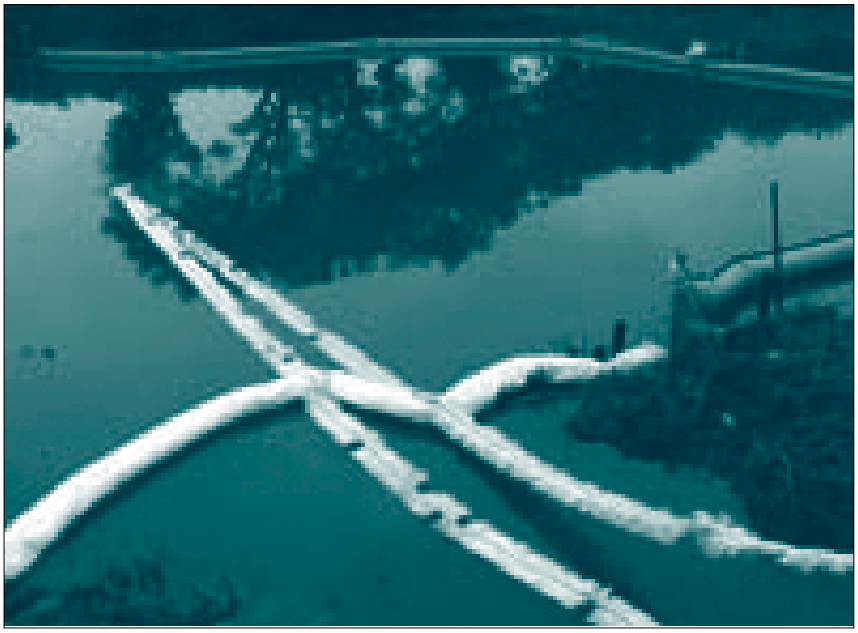
Water Quality

River Pollution Emergency Response System Enhanced

In addition to ensuring preparedness for marine oil pollution incidents, the EPA has placed great importance on recent river pollution incidents this year. One cause for concern is the numerous domestic factories that often use heavy oil boilers. To address this potential risk the EPA has established a water pollution emergency response system and has worked to enhance operational skills of crisis management related personnel.

In February this year, Honmyue Enterprise, a textile plant located in Syiansi Township, Changhua County(彰化縣線西鄉), damaged its heavy oil pipeline during maintenance and was unable to stop leakage in time. One ton of heavy oil spilled into the nearby drainage and flowed toward the mouth of the ocean. To prevent the coastal oyster fishery from contamination, the Changhua County Environmental Protection Bureau (EPB) launched the water pollution response system by placing oil absorbent socks and sheets before the drainage mouth, effectively blocking the oil from reaching the ocean. The operation successfully prevented damage to the fishery area. Then in March, Yuen Foong Yu Paper Manufacturing Company in Dashu Township, Kaohsiung County(高雄縣大樹鄉), leaked 3.5 tons of heavy oil due to level meter failure, 1.5 tons of which flowed into the Caogong Canal (曹公圳). The system responded by quickly supplying oil suction devices and oil absorbent materials to clean up the spilled oil.

Recognizing the need for all levels of environmental protection agencies to enhance their ability to handle water pollution emergencies and improve their professionalism at such times, the EPA arranged for the nation's environmental protection authorities to attend a water pollution emergency response training workshop on March 30, which took place at the Beitou Incinerator, Taipei Department of Environmental Protection.



Booms, skimmers and oil absorbent sheets are employed during emergency response to oil pollution.

The EPA expressed that the first step after the Amorgos incident three years ago was to immediately add cutting-edge equipment and technology to the marine pollution response system. Later on, the EPA launched the water pollution response system on August 30, 2001. The system identifies three classes of water pollution according to degree of impact and specifies three levels of appropriate responses by local governments, the EPA in collaboration with local governments, and National Disaster Prevention and Protection Committee, respectively.

Since the establishment of the system two years ago, the EPA has purchased emergency equipment and materials and allocated them among local EPBs and the regional inspection teams in northern, central and southern Taiwan. The continual aim is to ensure that local governments are well equipped to handle emergencies at the earliest opportunity. However, two consecutive river pollution incidents within two months of each other in Changhua County and Kaoshiung County have shown the need for all levels of environmental protection agencies to enhance their response management skills in such times of crisis. The EPA therefore arranged for a water pollution emergency response and training workshop at the Beitou Incinerator.

Water Quality

Hot Springs Wastewater Pollution Investigation Underway

Since revisions were made to the *Water Pollution Control Act* in 2003, reuse of water resources and management of industrial wastewater have become focal points for the EPA Department of Water Quality Protection. Wastewater from the hot springs industry has become an issue of particular concern for the EPA, due to the fact that this kind of pollution is closely related to many citizens' lifestyles.

An abundance of hot springs in Taiwan and a growing hot springs tourist population has led to increased pollution from hot springs wastewater. To effectively control hot springs wastewater, the EPA has entrusted a group of scholars to investigate wastewater from hot springs and adjacent restaurants, as well as research methods and the necessity to control pollution from hot springs wastewater.

Taiwan currently has 128 hot springs sources, 42 of which are located in water source quality protection areas. Based on the *"Hot Springs Act"*（溫泉法）, environmental protection agencies are required to adopt necessary controls toward pollution generated by the hot springs industry. The EPA thus resolved to first commission a group of scholars to carry out environmental investigations on hot springs and determine the extent of pollution and controls.

Following a research discussion held on April 5, 2004, the EPA made a further estimate of pollution amounts after looking into hot springs water quality, generation of wastewater, the status of operations and the current status of pollution at hot springs businesses in 15 areas. These 15 hot springs areas were selected by a commissioned group of scholars from National Taiwan University Environmental Engineering Research Institute. Investigation methods involved taking samples from hot springs wastewater and nearby restaurant wastewater at 15 upstream locations and 30 downstream locations. Samples were examined for characteristics in ten categories including pH, temperature, chemical oxygen demand (COD), biological oxygen demand (BOD), suspended solids, and fecal coliform. Studies were also made to determine the presence of boron, fluorine and arsenic in hot springs water sources. Additional ecological investigations were carried out in ecologically sensitive areas.

This investigation will last for one year and the results will be used to categorically indicate the necessity for controls and to draw up control methods. For more information, please call 02-23117722 ext. 2820.

Activity

"Complete Sorting, Zero Waste *Action Year" Seminar*

The EPA convened the "*Complete Sorting, Zero Waste* Action Year" Seminar in Taichung City on March 4. All directors of local environmental protection bureaus (EPBs) attended along with division chiefs of related divisions and township hall sanitation crew captains. Former Taipei City EPB Director and current Executive Yuan Secretary-General Liu Shi-fang（劉世芳）was invited as a special guest to encourage participants. To promote sustainable use of resources and complement the international trend toward "Zero Waste," the EPA reiterated during this seminar that source reductions and resource recycling are the main concepts embodied in the new policy on waste management. It is hoped that all environmental protection personnel do their utmost to assist with the promotion of this new policy.

Waste Management

Economic Recovery Leads to Increased Industrial Waste in 2003

Due to economic recovery and tightened controls by the EPA, the number of domestic industrial waste reports increased last year compared with previous years. With sights set on achieving zero industrial waste, the EPA has enhanced reporting procedures for the movement, auditing and regulatory listing of industrial waste. The rapid increase of hazardous industrial waste currently demands particular attention.

Before the revision of Taiwan's *Waste Disposal Act*（廢棄物清理法）in 1999, the government had little involvement in the management of industrial waste and industries were responsible for formulating their own measures to manage industrial waste. As a result, some industries, due to cost considerations, did not relegate their waste to qualified disposal enterprises for appropriate disposal. This resulted in frequent illegal waste dumping incidents. The Cishan River Incident（旗山溪事件）in 2000 exposed the urgency of attending to industrial waste disposal problems. The EPA responded by drafting the "National Industrial Waste Control Clearance and Disposal Plan"（全國事業廢棄物管制清理方案）to reinforce control measures.

Last year, the total domestic volume of reported industrial waste reached 13.41 million tons, up 1.46 million tons from 2002. The volume of reported industrial waste grew by 12.2% during 2003, with general industrial waste accounting for 9.3% of this increase over year 2002. The volume of reported hazardous industrial waste increased 60%. According to analysis of reported waste volumes received from large-scale and medium- to small-scale enterprises, most companies revealed a growth trend during 2003. The Ministry of Economic Affairs' announcement that the economy improved in 2003 attests to the fact that the increase in waste production volume was due to economic recovery and tightened controls laid down by the EPA.

Taking a look at categories of reported industrial waste, in the category of general industrial waste, ash residue accounted for the bulk (33%) of the total amount, followed by mine tailings and BF slag (32%), and sludge (15%). These three types of waste comprised 80% of the total amount of reported waste. In the category of hazardous industrial waste, the primary types of reported waste were waste acids and bases (30%), slag (21%), TCLP-tested toxic industrial waste (10%) and mixed scrap metal (10%). These four categories comprised 70% of all reported hazardous industrial waste.

Based on statistics compiled by the Industrial Waste Control Center on reported waste, a total of 17.08 million tons of industrial waste required management in 2003. Currently, the treatment capacities of primary disposal methods for industrial waste include reuse and recycling (9.08 million tons), public and private waste disposal and self-disposal (8.15 million tons), extra general waste incineration capacity (1.8 million tons) and extra landfill capacity (actual disposal volume of 56 thousand tons). The total treatment capacity for industrial waste in 2003 amounted to 19.08 million tons— 2 million tons more than the actual volume of waste generated.

As for the amount of industrial waste that was reported to have been reused, coal ash comprised the bulk posting 33.5% of all reused waste at 301 tons. Most coal ash is generated by Taipower, and it is mainly reused in cement, concrete, building materials, and backfill material. As for reuse of hazardous industrial waste, solid waste with pH values greater than 12.5 accounted for the bulk (35.7%) of reused hazardous waste at 170 thousand tons. China Steel Corporation（中鋼公司）generated the largest proportion of such waste, which it reused in its factory during sintering processes.

News Brief

EPA to Set Up Specialized Groundwater Affairs Division

To expedite remediation of several soil and groundwater pollution sites and facilitate the implementation of the *Soil and Groundwater Pollution Remediation Act*（土壤及地下水污染整治法）, the EPA has revised Article 6 concerning *Rules on the Work Affairs of the Environmental Protection Administration*（環保署辦事細則）. The revision has divided the Department of Water Quality Protection's Fourth Division of Marine and Groundwater Affairs into two separate divisions: the Fourth Division of Marine Water Affairs and the Sixth Division of Groundwater Affairs. This measure has been taken to strengthen investigation, remediation and emergency response management of groundwater pollution. The draft revision was approved by the competent authority on March 23 and entered the Executive Yuan's ratification process on April 2. The Sixth Division will handle the following affairs: protection of groundwater quality; drafting revisions to the Soil and *Groundwater Pollution Remediation Act*; pollution investigation, assessment, management, remediation and restoration; and pollution control in areas of subsidence.

Regarding current problems with industrial waste control, the EPA has indicated that rapid changes among industry groups has a bearing on waste types and amounts, and therefore requires strengthening the effectiveness of control regulations and response measures. Tracking mechanisms and the handling of transactions pertaining to disposal of ash generated at incineration facilities still need to be reinforced. Moreover, the potential environmental risk from the gradual increase in volume of domestic hazardous industrial waste deserves further attention.

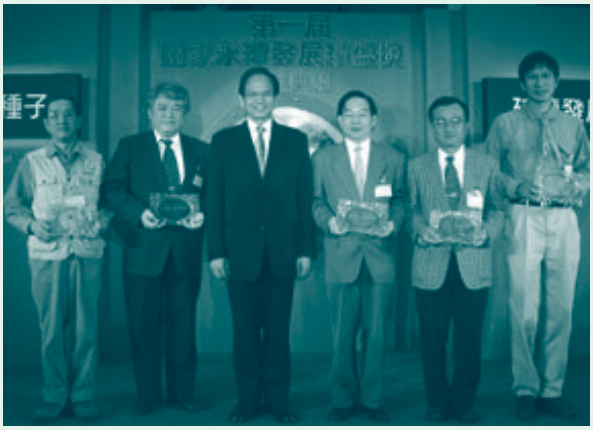
News Briefs

Drippy Air Conditioners Subject to Penalties from 6/1

The EPA announced on March 17 that air conditioners of buildings or stationary structures must install appropriate hoses to drain or otherwise control the flow of condensate water or cooling water so that it does not directly or indirectly drip onto another's property. Those responsible parties that fail to make improvements within seven days after having been advised by an inspector will be regarded as engaging in a polluting activity and will be fined between NT$1,200 and NT$6,000. This rule will become effective as of June 1. The EPA has noted that many air conditioners either lack or have unsuitable hoses to drain condensate water, or cooling water tanks are not appropriately blocked off to prevent water from dripping onto others' property or from directly dripping onto pedestrians. This has been the cause of frequent public complaints. After consulting with local environmental protection bureaus, the EPA has announced Article 27~11 of the *Waste Disposal Act*, which stipulates measures for dealing with this situation.

Environmental Information Website Launches Changhua and Nantou Databases

The EPA has recently completed the collection and establishment of basic environmental information for Changhua and Nantou counties and cities, and has made this information available online at http://edb.epa.gov.tw. This is a demonstration model to trial the integration of local environmental information into comprehensive databases. The EPA is now compiling basic environmental information for Taipei and Kaohsiung counties and expects to have the information ready by the end of September. Environmental databases for Yunlin, Chiayi, Tainan, Keelung, Ilan and Hualien counties will also be added to this year, which is expected to facilitate awareness of environmental protection and motivate environmental action at the ground level.



Five NGOs—The Society of Wilderness（荒野保護協會), the Wild Bird Society of Taipei（台北鳥會), the Taiwan Construction Research Institute（台灣營建研究院), the Taiwan Environmental Information Association（台灣環境資訊協會), and the Chinese Taipei Mountaineering Association（中華民國登山健行會)—were selected to receive the "NGO Contribution to Sustainable Development Awards." Premier Yu stands with representatives from the five awarded NGOs.

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