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Feature Column

EPA Kicks Off Three-Year Environmental Action Plan

Continually finding ways to infuse innovative ideas and methods into policies currently in effect, early this year the EPA announced the Environmental Protection Three-Year Action Plan, a plan that integrates the efforts of all the major EPA departments into one combined force for a span of three years. This plan adopts the spirit of sustainability originally imbued in the national *Basic Environmental Act*, employing concrete, incremental environmental action plans that firmly put environmental policies into action.

Three-Year Action Plan Fuses Innovation with Sustainability

To work most effectively, environmental protection relies on a combination of concrete action, full citizen participation and integrated resources. Not only should actions be innovative, but they should also be pursued in a way that pushes existing policies forward. Incorporating these principles, under the guidance of EPA Administrator Chang Juu-en (張祖恩), the EPA has set forth the Environmental Protection Three-Year Action Plan (環境保護三年行動計畫) early this year as a foundation for implementing environmental policies in the upcoming year. This three-year action plan contains the following six subplans: "Model Environmental Lifestyles Plan," "Open Information and Full Citizen Participation Plan," "Environmental Pollutant Reduction Plan," "Complete Sorting of Garbage for Zero Waste Plan," "Industrial Waste Control and Zero Waste Strategy," and the "Environmental Fate Monitoring Action Plan."

Under the "Model Environmental Lifestyles Plan," households, schools, communities and enterprises are designated as bases of operations from which the entire populace can be exposed to a lifetime of environmental education opportunities. The plan uses reward and praise mechanisms, motivating citizens to take initiatives to live more environmentally friendly lifestyles. Creating high quality living environments and a society that recycles all resources will bring Taiwan one step closer to attaining the ultimate objective of sustainability. This action plan is

Diagram of the three-year action plan and its six focal areas, designed to guide the EPA through 2006.

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made up of several subplans that focus on cleaning up household areas and caring for local environs, developing community environment reconstruction plans and sustainable homes, promoting green consumer plans, strengthening environmental sanitation management, reinforcing drinking water management, and maintaining sanitary holding tanks and water towers for tap water users.

Full citizen participation in national policies is already a future trend. To facilitate this concept, the EPA has formulated the "Open Information and Full Citizen Participation Plan," a proactive plan that makes environmental information accessible to all, and increases full citizen participation in environmental protection policies. This action plan aims to establish an environmentally harmonious society with full citizen participation by implementing the following three concrete subplans: the Environmental Consensus Online Forum Plan, the National Environmental Affairs Forum Plan and the Open Environmental Information Plan.

Reducing Environmental Pollutants to Protect Health

Long-term exposure to hazardous pollution in the environment poses direct and serious risks to human health. In order to protect citizens' health, the "Environmental Pollutant Reduction Plan" specifically targets dioxin, volatile organic compounds (VOCs), heavy metals, toxic chemical substances, river basin pollution and soil and groundwater pollution, ensuring the implementation of pollution reductions and control measures. This plan includes seven subplans:

1. Dioxin Reduction Plan: Includes collecting information on the operation of incinerators, reducing the amount of chlorinated substances in incinerators, inspecting incinerator exhaust and ash, and drafting the *Dioxin Control and Emission Standards for Ore-sintering Plants in the Steel Industry* （煉鋼業燒結工場戴奧辛管制及排放標準） as a measure to standardize steel making industry operations and emissions.

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2. Heavy Metals Reduction Plan: Work includes reducing and separating source waste; implementing pollution inspections, control technology, and risk assessment for heavy metals at coal-burning facilities; and carrying out focal inspections of other industries with heavy metal emissions.

3. VOC Reduction Plan: Includes applications of infrared detection technology to supervise petrochemical, electronics and other industries with VOC emissions. This subplan entails inspections for VOCs in the wastewater of these industries' sewage treatment plants. It also follows through with current work to install vapor recovery equipment at gas stations and ensure that they maintain effective operations to reduce the occurrence of escaped gas vapor pollution.

4. Toxic Chemical Substances Regulation and Emissions Reduction Plan

5. Clean Vehicle Development Plan: Encourage motorbike manufacturers, by way of guidance and incentives, to continue research and development on the production of low-polluting fuel injection engine motorbikes and encourage citizens to use such vehicles. Gradually increase the number of models and the sales volume of low polluting fuel injection engine motorbike models: sales volume in the first year should comprise 2.5% of annual motorbike market total, 8% in the second year, and 15% in the third year. The plan also entails drawing up *Fifth Stage Motorbike Emissions Standards* to require all motorbikes to use fuel injection engines.

6. River Basin Pollution Reduction Plan: River remediation through ecological engineering, water pollution focus investigation action plan and investigation of illegal wastewater and sewerage discharge.

7. Soil and Groundwater Remediation Action Plan: Expedite pollution amelioration work on the nation's heavy metal contaminated farmland, with focus on pollution site investigation and remediation work at China Petrochemical Development Corp's AnShun Plant（中石化安順廠）in Tainan City . Accelerate pollution amelioration work at previously announced pollution sites, continue to carry out emergency response work at pollution sites, announce control sites and handle remediation. Cleanup work at

sites where industrial waste has been dumped.

Complete Sorting and Recycling Helps Meet Ultimate Goal of Zero Waste

Based on the contents of the Review and Prospects of the Garbage Disposal Plan（垃圾處理方案之檢討與展望）approved by the Executive Yuan on December 4, 2003, the EPA is aggressively promoting the "Complete Recycling for Zero Waste" action plan. This will ensure that resources are efficiently cycled and reused, to eventually achieve the goals of complete sorting and zero waste. A forecasted 154 tons of resources will be recycled in the year 2007, increasing up to 199 tons in 2011, and 316 tons by the year 2020.

This action plan comprises seven subplans: 1) Garbage Sorting, Recycling, and Reduction Plan: enforced garbage sorting; establish resource recycling and sorting plants; subsidize local governments to install recycling facilities and machinery as well as storage facilities; draw up work plans and guidance assessments for implementing enforced sorting policy; and strengthen measures to advocate recycling. 2) Taiwan Area Garbage Disposal Follow-up Plan: Establish general waste sanitary landfills; carry out restoration projects at closed landfills to reuse the space; and entrust garbage cleanup to the private sector. 3) Food Waste Clearance and Recycling Plan. 4) Environmental Science and Technology Park Promotion Plan. 5) Plan to Build a New Image for Environmental Facilities —Transformation of Incineration Plants: Design garbage disposal facilities and regional cooperation mechanisms; design and establish baseline data for waste incineration and reuse. Install waste incinerator information system; establish waste incineration plant entrance (and exit) management system; assess waste incinerator ash reuse technology and formulate plans to make reuse more widespread; and establish waste incineration disposal monitoring and long-term tracking system. 6) Plan to Promote Awareness of Newly Listed Mandatory Recyclables. 7) Plan to Increase Recycling Rates of Items Already Listed as Mandatory Recyclables.

Going one step further to raise the effectiveness of waste disposal and promote the reuse and recycling of resources, the "Industrial Waste Control and Zero Waste Strategy" action plan includes the following eight focal work areas: 1) Formulate "zero waste" strategy for industrial waste. 2) Carry out comprehensive review of the implementation status of industrial waste administrative management plans and control measures. 3) Continue implementation of industrial waste source management, flow tracking, and investigation of controls. 4) Establish basis for assessing effectiveness of industrial waste intermediate treatment and best available disposal technology. 5) Strengthen the performance of control and tracking measures of ash disposal at incineration facilities. 6) Assess the current status of disposal of construction and agricultural waste, coordinate the competent authorities of industries to establish appropriate clearance system. 7) Establish comprehensive electronic control system for industrial waste. 8) Reduce environmental risks during the transport of industrial waste.

Among the nation's environmental pollution problems, the arbitrary dumping of industrial waste is the most serious, as it continually re-emerges in the form of soil, groundwater and river pollution incidents. To combat this, the EPA has drawn up the "Environmental Fate Monitoring Action Plan—Environment Forensics Case Verification Plan." This plan calls for the completion of one environmental law forensics case verification plan for one pollution source or pollution site per year. It is hoped that illegal dumping incidents can be effectively prevented by collecting compensation in the form of disposal fees, and requiring polluting parties to take legal responsibility for their actions. The plan adopts the following concrete actions:

—2004: "Soil and Groundwater Pollution Case Source Tracking Plan (Stage 1)—China Petrochemical Development Corp's AnShun Plant Pollution Site Investigation"

—2005: "Steel Smelting Industry Dust and Ash Collecting Fingerprint Tracking Demonstration Plan" (to track the source of illegally dumped industrial waste)

—2006: "Soil and Groundwater Pollution Incident Source Tracking Plan (Stage 2)—Groundwater Organic Solvent Pollution Investigation"

News Brief

Industrial Waste Clearance and Disposal Plans Due By End of May

The EPA has been accepting the submission of the third group of industrial waste clearance and disposal plans for review since February 1, 2004. All plans must be submitted by May 31, 2004. Enterprises that have not yet started to fill in this report are requested to promptly sign up on the Industrial Waste Control Center Online Report System, and begin filling the "Clearance and Disposal Plan" through this online system. Enterprises that fail to submit duplicate copies of their industrial waste clearance and disposal plan to local competent authorities before the deadline will be fined from NT$6,000 to NT$300,000 according to the *Waste Disposal Act*（廢棄物清理法）. The online application form can be found at http://waste.epa.gov.tw

General Policy

Environmental Expenditures Comprise 1.19% of GDP

Results from a survey taken by the EPA in 2002 on environmental spending by government and industry sectors reveal that the majority of government expenditures toward pollution control are in the areas of waste recycling, clearance and disposal. In contrast, industry environmental expenditures are highest in the area of wastewater treatment. Overall, environmental expenditures comprised 1.19% of GDP for Taiwan in 2002 have been targeted in this group and will be ready to hit the roads by the end of February.

Data on the allocation of environmental budgets in government and industrial sectors have been collected and compiled into statistical form in order to identify the relationship between the environment and the economy. This information is necessary in compiling fundamental data for the Green GDP and related policies. The EPA is currently carrying out a statistical survey on government expenditures for the years 2002, 2003 and 2004. Last year marked this survey's second year, during which time statistics for the year 2002 were compiled and are now available.

The EPA's definition of "environmental spending" in this survey is based on the framework of the Pollution Abatement and Control Expenditure (PAC) used by the Organisation for Economic Co-operation and Development (OECD). It refers to expenditures made to prevent, reduce or eliminate pollution or public nuisances resulting from production and consumption processes.

Government and industry sectors are the target of this environmental expenditures survey. In 2002, the government's total environmental spending reached NT$52.1 billion, of which 86% (NT$44.7 billion) was applied toward pollution control, ranking the highest of all environmental expenditures. In terms of government levels, the city/county level made up the bulk of all environmental expenditures at NT$29.5 billion (57%). Among the different categories of pollution control, waste recycling, clearance and disposal accounted for NT$34 billion, or 76% of all pollution control expenditures.

The industry sector in this survey includes private manufacturers and publicly operated electricity, gas and water enterprises, the environmental expenditures of which were NT$63.6 billion in 2002, with NT$61 billion or 96% allocated toward pollution control. Electronic component manufacturers accounted for the largest percentage of related expenditures at NT$8.7 billion (14% of total expenditures). Wastewater treatment made up the largest portion of spending toward pollution control at NT$21.2 billion (35% of total).

Government and industry sectors' environmental expenses reached NT$115.7 billion in 2002, which was NT$0.3 billion less than the previous year's (2001) amount of NT$116 billion. Government environmental spending decreased by NT$9.5 billion while industry increased environmental spending by NT$9.2 billion.

Compared with other nations, Taiwan's environmental expenditures accounted for 1.19% of GDP, lower than France (1.56%), Holland (1.88%) and the US (1.58%). However, such disparity can be partially explained by the fact that each nation has its own slightly different definition and scope of environmental expenditures.

Country	Total	Government	Industry
Taiwan (2002)	1.19	0.53	0.65
Germany (1997)	1.02	0.60	0.42
France (1998)	1.56	0.79	0.77
Holland (1997)	1.88	1.46	0.42
Britain (1997)	0.93	0.4	0.53
United States (1994)	1.58	0.65	0.93
Japan (1990)	0.92	0.92	--

Average per capita environmental expenditures by nation & by sector (%)

Soil & Groundwater

Soil Treatment Standards Adjusted to Reuse Water for Irrigation

Meeting current demands to reuse water resources, the EPA has revised the *Soil Treatment Standards*, now allowing enterprises to use treated wastewater to water plants and trees and keep dust down. The revisions lower water quality standards of wastewater that is to be used for soil treatment methods to water vegetation and keep down dust levels. Original restrictions on total concentrations of nitrogen and phosphorus have been removed so as to make the best use of water resources.

Taking on the task of safeguarding water resources and enhancing the applicability of regulations, the EPA made a complete review of water pollution control policies in July 2003 and revised regulations concerning 11 water pollution control items. Revisions were made to stipulations that allow wastewater in compliance with *Effluent Standards* to be recycled and used. The intention of the revisions is to allow industry make the best use of treated wastewater via landscaping irrigation and spraying on dusty areas. Following the revision of *Soil Treatment Standards* on July 23, 2003, the EPA has recently announced a revision to Table 2, Article 19 of the *Soil Treatment Standards* on February 25, 2004. This revision primarily relaxes water quality standards of water allocated for soil treatment methods via watering vegetation and spraying down dust. Original restrictions on total concentrations of nitrogen and phosphorus have been removed so as to fully utilize limited water resources.

Aiming to conserve water resources, in the future all wastewater that has undergone treatment can be used to irrigate vegetation and spray down dust. In the past, public wastewater even after treatment was prohibited for irrigation use. However, after referring to the US's long-standing irrigation standards for watering plants and trees, and giving due consideration to the risk of human contact with such water, last year the EPA relaxed the original *Soil Treatment Standards*. The revised version adds that after undergoing an EIA review, treated water from public wastewater treatment plants, greywater from schools, and treated wastewater from residential sewerage systems, can all be directly discharged onto the ground, for use in irrigation or keeping dust down. For more information, please call 02-23117722 ext. 2820.

Public Complaint

Air and Noise Pollution Comprise Bulk of Public Complaints in 2003

Based on a satisfaction index survey based on public complaints received last year by the EPA, the public's level of satisfaction with environmental issues has increased over the last year. Air pollution accounted for the highest number of public nuisance complaints, with noise pollution as second most frequent complaint received. In contrast to previous years when environmental pollution generated by industrial factories was the focus of most public complaints, the survey results attest to the public's increasing demand for higher environmental quality as the years go by.

In order to get a better understanding of citizens' satisfaction and opinions about how various levels of environmental protection organizations handle public nuisance complaints, the EPA carried out public satisfaction surveys in the former and latter halves of last year (2003). Individuals targeted in this survey included all those citizens who had made a call to the public nuisance report hotline (0800-066666) to report a pollution case to any one of the government's environmental protection organizations. Results were compiled from a total of 2,620 respondents.

Results from both surveys revealed that of all reported public nuisance cases, air pollution events took the leading category, followed by noise pollution events and environmental sanitation events. Compared with previous years, the public has filed more complaint cases concerning environmental pollution produced by factories, indicating citizens' higher expectations of the quality of their living environment.

As for the service attitude of personnel who receive calls on the environmental protection complaint hotline, 48.7% of respondents expressed satisfaction, while 18.9% indicated dissatisfaction. Compared to last year's figures, the percentage of satisfied respondents increased by 16.6%, while the ratio of dissatisfied citizens decreased by 4.4%. This goes to show that citizens affirm the improved service attitude of environmental protection agencies when handling public nuisance complaints.

As for the results of case management, 18.6% of survey respondents were satisfied with the results obtained by environmental protection agencies in handling complaint cases, while 40.1% were dissatisfied. Of those dissatisfied, 43.9% of cases were concerning air pollution incidents and 27.2% were concerning noise pollution cases. Compared to 2002 results, the ratio of satisfied responses rose by 2.9%, while the ratio of dissatisfied responses decreased by 19.9%. While this shows a degree of progress in case management, it also indicates that much needs to be improved.

In addition, 62.1% of responding citizens conveyed that they had filed repeated complaints for the same reason, with most cases related to air pollution (46.7%) and noise pollution (27.3). This is an indication of the difficulty of eliminating sensory pollution sources and of the tremendous impact that sensory pollution has on the quality of citizens' living environment – often to the extent that dissatisfied citizens are prompted to file re-

peated complaints.

Based on the survey results, the EPA expressed that on the whole, citizens' satisfaction with environmental protection agencies' handling of public nuisance complaints has increased, especially in terms of handling complaints on the telephone. As for the high ratio of citizens reporting that cases were not handled to their expectations, the EPA has requested that all local environmental protection agencies strengthen tracking and follow up investigation as well as continue to provide professional training for inspectors.

As for air and noise pollution comprising the majority of public nuisance complaint cases, the EPA explains that more often than not, inspections into these two categories of polluting activities show that in actuality the level of pollution does not exceed standards. This understandably leaves reporting citizens feeling dissatisfied, and makes it hard to raise the overall level of public satisfaction. The EPA has advised related offices to directly state the regulations to citizens so that they can understand the problem. It is hoped that most problems in the future can be resolved by spending a little more time in responding and offering guidance to the reporting individual.

For more information, please call 02-23117722 ext. 2910.

Waste Management

EPA Subsidizes Construction of 21 Landfills in 2004

The EPA's waste management plans this year entail: subsidizing construction of 21 regional sanitary landfills in counties and cities with lower rates of appropriate disposal; subsidizing restoration of 25 county and city level landfills; encouraging the private sector to take on clearance and disposal projects; promoting cross-county cooperation in waste clearance and disposal; and reinforcing environmental cleanup and maintenance along tourist routes and neighboring areas.

Incineration is the primary method of waste management in Taiwan, as a means to facilitate garbage reduction and resource recycling. However, it is impossible to immediately construct and operate incinerators in the 12 counties and cities that still lack such facilities. Considering unavoidable limitations such as natural disasters, mechanical breakdown or shutdowns during yearly maintenance, as well as large volume of post-disaster non-combustible waste, the problem of garbage disposal needs to be addressed immediately. After assessing the situation, the EPA has found sanitary landfills and other waste treatment technologies to be the most feasible solutions in the interim before the construction of large-scale incinerators is finished.

The EPA's 2004 waste management agenda focuses on: 1) Subsidizing construction of 21 regional sanitary landfills (including extended projects) in counties with lower rates of appropriate disposal such as Ilan, Yunlin, Hsinchu, Taoyuan and Taitung. This is expected to result in increased treating capacity of 2 million metric meters. 2) Subsidizing restoration work of 25 landfills at county and city levels (including extended projects). A total of 40 hectares of restoration is expected. 3) Encouraging the private sector to take on garbage clearance and disposal responsibilities on BOT basis, promoting cross-county cooperation in waste clearance and disposal, and transferring garbage produced in source water protection zones downhill for appropriate treatment. 4) Reinforcing environmental cleanup and maintenance work along tourist routes and neighboring areas to cooperate with the implementation of the "Doubling Tourist Arrivals Plan" （觀光客倍增計畫）.

Four major projects are prioritized in the budgetary allocation for 2004: 1) NT$600 million for construction of regional sanitary landfills, NT$100 million for handling machinery, NT$150 million for environmental cleanup and beautification, NT$76 million for planning, promotional activities and prizes; 2) NT$300 million for landfill restoration; 3) NT$150 million for BOT projects by empowering the private sector to take on garbage clearance and disposal responsibilities at local and cross-district levels; 4) NT$140 million for environmental cleanup and maintenance along tourist routes.

Implementation of these strategies is expected to bring a number of benefits. New regional sanitary landfills will see improved performance in the counties and cities that currently show lower rates of appropriate disposal or handling capacities. Meanwhile, they will facilitate garbage management in the period of maintenance, mechanical breakdown, and shutdown of incineration plants, as well as when a surge of waste is produced after frequent disasters such as typhoons, storms, and earthquakes.

Secondly, landfill restoration will be carried out, entailing the closure and greening of landfills to make the best use of land resources. These projects will ensure the sustainable use of land resources and will increase public green space and recreational areas. Commissioning garbage clearance and dis-

posal out to the private sector will lessen the management load and financial burden on the government. Cross-district clearance is adopted to ensure that garbage produced in water source protection zones is managed properly and water is safeguarded. Special attention will be given to cleanup work in scenic spots and neighboring areas along tourist routes to promote a healthy environment and quality tourism.

As this is a subsidized NIMBY (not in my backyard) program and requires matching funds allocated by local governments, the EPA will take the following measures in order to avoid situations such as public demonstrations, opposition, or implementation behind schedule:

1. Increase subsidiary proportion to lessen financial burden on local governments with outstanding performance by applying Article 11 from *Regulations Governing Central Government Subsidization of Municipal and County (City) Governments* (中央對直轄市及縣（市）政府補助辦法) . Also, continue negotiation with budget control authority to ultimately cancel regulations on matching funds or enable equal applicability for constructing incineration plants.
2. Allocate funds for raising public awareness and building consensus to lessen anti-construction sentiment. Strengthen education, training and observation for inexperienced staff in local environmental agencies. Compile budget for auditing, record tracking and dispatching specialists to assist and monitor on the local level.
3. Invite local EPBs to establish a review council of sanitary landfill construction that monitors work progress and relocates subsidies accordingly.
4. A team joined by personnel from the anti-corruption and accounting departments will visit project counties, cities and townships to oversee execution work and help solve problems at local levels.

Waste Management

Landfill Restoration to Revitalize 50 Hectares by 2006

To ensure that land resources are used to their fullest potential, many areas throughout the nation have been engineering garbage removal, and greening and beautification projects at closed sanitary landfills. In addition to providing areas for recycling resources, closed landfills that have undergone reclamation and greening are commonly turned into recreation areas and scenic spots for local residents.

Looking to make the best use of resources, the government has required all polluted lands to undergo restoration and planning for sustainable development. On February 16, 2004, the Council for Economic Planning and Development, Executive Yuan, reviewed the Taiwan Area Garbage Disposal Follow-up Plan (台灣地區垃圾處理後續計畫) , which is slated to apply a total budget of NT$925.5 million toward the removal of three to five sanitary landfills by the end of 2006. The plan primarily addresses existing closed landfills or garbage piles that require waste removal due to potential risks, risk indicators, or unsuitable locations for on the spot remediation. Appropriate plans will be drawn up for each site to remove and separate waste materials, sorting out all resources for reuse.

A technology consultancy has already been commissioned to handle assessment and survey work for this project. This consultancy is responsible for seeing to collection of information on the closure of landfills, surveying current status, drafting related administrative measures and work guidelines, and formulating a list of items prioritized for removal. Counties and cities will apply and review work guidelines and submit

Results of restoration and greening projects after the closure of Hujhen Landfill in Kinmen County.

applications according to relevant work standards, upon which the EPA Department of Engineering will base its review.

A total of NT$100 million was allocated for consultancy fees, construction fees and related work fees in 2004. The expected benefits of this plan are first of all to solve potential hazards at closed landfills. In addition, any useable resources will be sorted out during excavation work and humus soil from organic items will be applied in afforestation or used as topsoil fill. What was once considered waste will be given a new life through recycling and reuse.

In order to proceed with greening and restoration, the land is then sculpted into a visually pleasing landscape that is suitable for public recreational use. From three to five sites are expected to complete waste removal engineering by the end of 2006, removing a total of 750,000 to 1,000,000 cubic meters of waste. It is estimated that about 10,000 tons of metal and 5,000 tons of plastic will be recovered and recycled, and a total of 50 hectares of land will be restored.

Recycling

All Dry Cell Batteries to Carry Recycling Symbol

In an initiative to remind citizens to properly recycle batteries, the EPA has mandated all manufacturers and importers of dry cell batteries to put the four-arrow recycling symbol on the packaging, labels or exteriors of all types of dry cell batteries that are for sale, included in products or used for promotional purposes, starting from January 1, 2005.

The EPA announced on May 1999 that all discarded dry cell batteries lighter than one kilogram should be recycled and that all mercury and cadmium dry cell batteries should be labeled with the words, "Reduce usage of mercury/cadmium batteries and be sure to recycle them." However, this stipulation did not require all other types of dry cell batteries to carry the recycling symbol. This omission led some of the public to believe that it is not necessary to recycle batteries that do not carry the recycling logo.

From January 1, 2004, all dry cell batteries are required to display the recycling symbol

To ensure that the public understands that all types of dry cell batteries must be recycled and increase the recycling rate of spent dry cell batteries, the EPA announced on January 28, 2004, that from January 1, 2005, all manufacturers and importers of dry cell batteries that are for retail, included in products, or for promotional use must affix the recycling symbol on the packaging, labels or exteriors of all types of dry cell batteries. Enterprises found distributing batteries without the recycling logo will be fined from NT$60,000 to NT$300,000.

For the special case in which dry cell batteries have already been inserted into products that are sold that are for retail, included with products, or for promotional uses, the EPA states that the product packaging, label or instruction manual should include the recycling symbol with the accompanying message: "Please recycle all used batteries." The intent behind this initiative is to remind people to recycle used batteries in the proper manner and not throw them in trash along with general waste.

A total of 9,000 tons of dry cell batteries were distributed on the market in 2003. A confirmed 1,017 tons of dry cell batteries were recycled in 2003. Added to this are approximately 500 tons of batteries that have been turned in for recycling and are currently in storage waiting to be exported for recycling. Thus a total of around 1,517 tons of batteries entered the recycling system in the year 2003, for a recycling rate of about 17%. This shows that more effort is required from the public to cooperate with recycling initiatives.

The EPA has called on industry to affix the recycling symbol on all dry cell batteries during manufacture and import procedures starting from January 2005. Meanwhile, citizens are also asked to bring their used batteries to recycling points in specified shops that sell batteries (includes seven categories: wholesale or retail vendors, supermarkets, convenience chain stores, sanitary and cosmetic product chain stores, convenience stores at transportation hubs, wireless communication product outlets, and photography product outlets). Otherwise, used batteries can be given to sanitation crew trucks during garbage pickup.

For more information, please call the 24-hour toll-free recycling hotline: 0800-085-717.

Waste Management

Enhanced Management of Fly Ash from Municipal Waste Incinerators

The disposal of bottom ash and fly ash from waste incinerators has been an issue of serious public concern. The EPA stated that most of the bottom ash from the nation's large scale incineration plants is appropriately disposed of in landfills. The management of fly ash at incineration plants has become the target of EPA audits and evaluations, as well as the focal point for reviewing inspection agencies.

The bottom ash and fly ash left behind after incineration processes contain high volumes of heavy metals, which if are not handled appropriately, could pose a serious threat to human health. According to the EPA's statistics for 2003, bottom ash accounts for 850,000 tons of all the ash produced by the nation's 19 large-scale waste incineration plants each year. Although a small amount of this is reused as a resource, the majority of bottom ash is sent to landfills for final disposal.

The EPA noted that exhaust treatment systems installed at each incinerator collect a combined total of 200,000 tons of fly ash every year. Apart from the Tainan City incineration plant, which is provisionally storing its fly ash in on-site holding tanks until ash vitrification facilities are up and operating, the rest of the nation's fly ash first undergoes intermediate stabilization treatment after which it is delivered to landfills designated by county and city environmental protection bureaus (EPBs) for isolated burial. Fly ash treatment procedures are currently the main focus of the EPA's audits and evaluations of operations at each county and city waste incineration plant. EPA Bureau of Environmental Inspection units have also been listed as the focal point for inspections.

As pertains the control of fly ash treatment, based on the *Regulations Governing the Recycling, Clearance and Disposal of General Waste*（一般廢棄物回收清除處理辦法), revised and promulgated by the EPA on November 27, 2002, incinerator fly ash must be separately stored and collected, and cannot be combined with bottom ash. Fly ash that has undergone TCLP tests and is shown to exceed *Standards for Defining Hazardous Industrial Waste*（有害事業廢棄物認定標準), must undergo solidification, stabilization, vitrification or other procedures approved by the EPA until the ash meets the standards. This ensures that hazardous substances are confined or fixed, or otherwise prevented from leaching into the soil or groundwater and causing pollution.

The EPA conveyed that fly ash from the three incinerators in Hsindian, Shulin and Bali (all in Taipei County) is sent to intermediate stabilization treatment facilities in Shulin. Fly ash from the Tainan City incinerator is temporarily stored in on-site facilities until vitrification facilities are completed. Fly ash from all other incinerators in Taiwan is brought to existing fly ash intermediate stabilization treatment facilities after which it is transported to landfills for final disposal. Reports submitted by incineration plants in November and December, 2003, show that heavy metal leachate concentrations of fly ash that has undergone intermediate stabilization treatment complies with standards.

In the EPA's efforts to effectively control ash produced from waste incinerators, it has issued a notice to all county and city EPBs requiring that from May 15, 2003 the location of all incinerator ash generated in their respective jurisdiction must be reported online throughout the entire transport and storage process. Moreover, all ash transport vehicles must install GPS equipment by May 31, 2004 to ensure that the movement of all ash can be traced and inspected, thus preventing the arbitrary dumping of ash.

News Brief

Principles for Application Permits to Transport Oil Revised

On February 23, the EPA announced Article 13 paragraph 1 of the *Marine Pollution Control Act*（海洋污染防治法), regarding principles for approving applications by private facilities designated to transport petroleum-based substances. The principles are as such:

1. Applicants should attach the application review form for private facilities designated to transport petroleum-based substances, and should submit for review the information document form, which is to be filled out according to the guidelines. There should be a total of 20 copies all together.

2. For applications that do not meet criteria or lack certain content, the EPA shall inform the applicant of the deadline in which to provide the required information. The extra days required to provide missing content will not be counted as part of the review period. Applicants who fail to provide all information before the deadline will be refused.

3. The EPA shall invite scholars, experts and other related representatives to review application materials. The review shall be completed within two months, with an optional extension period of two months if necessary. Only one extension is allowed.

Air Quality

Best Performers in Motorbike Emissions Checks Announced

The EPA has announced the results of last year's motorbike emissions inspections, revealing that 10.12% of motorbikes currently in use do not comply with emission standards. The most environmentally friendly motorbikes on the market, in other words those with the highest degree of compliance with low-pollution standards, are low-polluting fuel injected engine motorbikes. Four stroke motorbikes are the second best choice and the EPA recommends consumers to consider these models first when trading in their old motorbikes.

On February 11 this year (2004), the EPA published statistics on regular emissions inspections for motorbikes in 2003. On average, 10.12 percent of all motorbike models in use during 2003 showed substandard emissions. A total of 7.1 million motorbikes in use throughout the nation, comprising 93 different models, all underwent regular emissions inspections. The top five models with the lowest percentages of substandard test results were Yamaha's "Aichesu" 山葉愛車速 (only 0.93% of tests on this model showed substandard test results), Yamaha's "Xiaowanzi 100" 山葉小丸子100 (1.03% substandard test results), Kymco's "Haumaideyi" 光陽豪邁得意 (1.39% substandard), Yamaha's "Jinzhan 125" 山葉勁戰125 (1.56% substandard), and Piaggio's "Dahan" series比雅久大悍 (1.7% substandard).

The five models showing the greatest percentage of substandard emission test results were Yamaha's "Meide" 山葉美的 (27.69% of tests within this model showed substandard results), Sanyang's "Jinwang 100" 三陽金旺100 (27.54% substandard), Sanyang's "Jinwang 90" 三陽金旺90 (26.8% substandard), Sanyang's "Fengdong 50" 三陽風動50 (26.37% substandard) and Yamaha's "Dadoufeng" series 山葉大兜風 (26.34% substandard). Over twenty-five percent of all of the above models tested had substandard scores.

The EPA indicated that in the future, the above models will be prioritized during roadside inspections to find out whether these models' pollution control system designs are at fault. If substandard design of any of these models is confirmed, the manufacturers will be required to recall all vehicles and make the necessary improvements at no charge to the consumer. The EPA explained that an excessive degree of substandard emission test results obtained during scheduled tests could either be a result of vehicle owners' negligence to maintain their vehicles on a regular basis, or it could be due to faulty design or durability.

Rank	Brand	Model	Exhaust volume (cc)	Strokes	Average age of inspected motobikes	Number of motorbikes inspected	Ratio of substandard test results
1	Yamaha	"Aichesu" 愛車速	101	4	1.0	8,631	0.93%
2	Yamaha	"Xiaowanzi 100" 小丸子 100(XC100B)	100	4	1.6	15,915	1.03%
3	Kymco	"Haomaideyi" 豪邁得意	101	4	2.2	90,936	1.39%
4	Yamaha	"Jinzhan 125" 勁戰 125	124	4	1.0	2,955	1.56%
5	Piaggio	"Dahan" 大悍 (CP-150)	149	4	2.0	1,056	1.70%

2003 Ranking of low-polluting models from Third Stage Motorbike Emissions Inspections

The EPA noted that all motorbikes (scooters) that have been in use for over one full year should undergo regularly scheduled emissions tests once per year. If a vehicle shows substandard results during a regularly scheduled test, the owner has one month to fix the problem and retake the test.

The EPA states that all county and city environmental protection agencies have already begun issuing fines to vehicle owners who have not taken their motorbikes in for regular testing or whose vehicles have not passed the test. Owners who fail to attend regularly scheduled emission tests are fined NT$3,000. Owners with substandard emission test results who fail to amend the problem and retake the test within one month's time will be fined NT$2,000. It is hoped that citizens take advantage of the free regular testing service for motorbike emissions, which not only saves money but also ensures that their vehicles are in tune with environmental regulations.

While the government gradually takes steps to adopt control policies with tighter emissions standards, vehicle manufacturers are also busily engaging in research and development to introduce new low-polluting models. Last year's regular motorbike emission inspections revealed that the top 36 motorbikes were all four-stroke engines. This attests to the promising future of four-stroke motorbikes as low-polluting environmental vehicles.

The EPA has begun enforcing an even stricter fourth stage of con-

trol standards as of January 1 this year, and all motorbike manufactures have been coming out with low-polluting fuel injection engines designed to more than meet the fourth stage control standards. Emission pollutant values of these advanced models are at least half those of the fourth stage emission standards. The EPA provides a subsidy of NT$4,000 for all older motorbikes that are turned in for recycling and replaced with newly purchased low-polluting fuel injection motorbikes (NT$3,000 from the Air Pollution Control Fund, plus NT$1,000 from the "Discarded Vehicle Recycling Reward Fund"). If you are looking to purchase a new motorbike or would like to know more about regularly scheduled emissions tests, please check the EPA website and go to the "emissions testing" section, which lists information helpful in evaluating which model to purchase as well as maintenance options. From the Department of Air Quality Protection and Noise Control website (http://www.epa.gov.tw/F/index.htm), click on "Moving pollution source controls"（移動污染源管制）and then "Regular motorbike emissions inspections"（機車排氣定檢查詢）.

Water Quality

Counties and Cities Strengthen Water Source Quality Management

Already more than four thousand of the nation's packaged and dispensed water vendors are under regulatory listing. In addition to establishing a management information system, the EPA has requested county and city governments to strengthen inspection efforts to ensure safe drinking water. Out of the 521 inspections executed last year on non-tap water source enterprises, source water quality inspections were carried out 352 times, 348 of which met standards, while four inspections resulted in substandard source water quality.

Working to strengthen source water quality management of packaged and dispensed drinking water and thereby guarantee safe drinking water for citizens, the EPA has drawn up a special inspection and control plan, asking all local environmental protection bureaus (EPBs) to strengthen the management of source water quality, build up a complete management information system of packaged and dispensed drinking water, and compile basic information on vendors into files in a format that facilitates tracking and management. In addition, source water quality inspections will be reinforced for enterprises that draw from surface or groundwater sources, and EPBs are to clarify and establish the relationships between upstream vendors and mid to downstream vendors in order to gain effective command over this field of business.

The EPA explains that the management of packaged and dispensed drinking water vendors involves a broad range of various competent authorities in the areas of health, taxation, police work, water resources, and building administration. In order to achieve comprehensive and efficient management, it is necessary to establish communication channels between related agencies or organize joint inspections to confirm the legality of sales transactions, water quality, product labels, tax payments, interference with traffic, violations of building codes, water rights registration, and factory registration.

Currently local EPBs have included 184 enterprises on regulatory listing for packaged and dispensed drinking water sources, 93 of which use tap water as their water source. The remaining 91 enterprises use non-tap water sources including surface water and groundwater. Out of 4,721 listed water dispensing stations, 1,377 use tap water sources, while the remaining 3,344 use non-tap water sources.

Out of 4,273 inspections proactively administered by local EPBs from January to December 2003, 759 inspections were water at source enterprises and the remaining 3,514 inspections were at water dispensing enterprises. Among the 759 inspections of water source enterprises, 238 inspections showed tap water being used as the water source while 521 inspections showed non-tap water sources. Among the 3,514 inspections of water dispensing enterprises, 1,541 inspections found tap water being used as the source and 1,973 inspections found surface water or groundwater as the source for dispensing stations.

As source water quality of tap water source enterprises already complies with drinking water quality standards, inspections focused on those non-tap water source enterprises that draw water from surface water or groundwater. Out of the 521 inspections administered, 352 were source water quality inspections. Of these, 348 showed adequate results, while four showed substandard test results under the category of coliform group density. Just because source water quality passes inspections does not necessary mean that the water quality of the product is adequate. Therefore, in the interest of maintaining safe packaged and dispensed drinking water, EPBs are requested to notify local sanitation

authorities of inspection results and to advise strengthened management of water quality in products according to the *Food Sanitation and Management Act*（食品衛生管理法）.

Various coin-operated water dispensing stations are now widely available on the streets. Unfortunately, some disreputable enterprises mix tap water into products labeled as mountain spring water. The *Drinking Water Management Act*（飲用水管理條例）stipulates that enterprises that use substandard quality source water, as defined in the *Source Water Quality Standards for Drinking Water*（飲用水水源水質標準）, in packaged or dispensed products will be fined from NT$60,000 to NT$600,000 and will prohibited from further operating as a drinking water source.

The Bureau of Environmental Inspection (BEI) has made it clear that all levels of environmental protection agencies have strengthened inspection and control of the water quality of packaged and dispensed drinking water sources. BEI especially calls on citizens to pay attention when purchasing packaged or dispensed drinking water to check whether the water source location and source water quality indicated on the product complies with the *Source Water Quality Standards for Drinking Water*. Inquiries about the source water quality of packaged or dispensed drinking water can be addressed to local EPBs and further information can be found on the EPA website: http://www.epa.gov.tw/j/drinkwater/

Water Quality

River Patrol Volunteers Help Fight Environmental Crime

EPA statistics revealed 153 cases of illegal nighttime wastewater discharge into rivers throughout the island during 2003. About 23% of these cases (35) were uncovered thanks to the efforts of citizen volunteer river patrols, attesting to the effectiveness of such patrols in fighting environmental crime.

Ever since the EPA designated the year 2002 as the Year of River Pollution Remediation, a special focus has been put on carrying out comprehensive remediation of 13 rivers in particular. In the same year, Water Environment Watch Patrols were established nationwide to safeguard these 13 river basins. Up to the end of 2003, 85 volunteer river patrols had been organized, with 1,200 volunteers.

Given the degree of seriousness to which Taiwan's rivers are currently still polluted, pollution inspection and control work on the nation's river basins demands immediate attention. Among the various methods used to inspect for pollution, on-site inspections bring the most successful results for industrial wastewater discharge during the evening (literally termed as "night pipes") and other illegal discharges. The EPA administered inspection and control work along 13 river basins last year, for a total of 11,397 inspections, 484 of which resulted in violations. A total of 153 "night pipes" were discovered, 100 of which were from industry and 53 of which were from pig farms.

As of the end of 2003, all 153 discovered "night pipes" had been sealed or removed. All felonious enterprises were issued heavy penalties, and in the event of extremely serious polluting activities, companies were forced to suspend operations.

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