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Inspections Strengthened In Wake of Water Source Contamination Incident

Following the contamination of a Kaohsiung drinking water source, environmental agencies have strengthened drinking water monitoring activities and stepped up environmental inspections. To punish the companies involved in the illegal dumping incident, the EPA has revoked their licenses and ordered a shut-down of their operations. Because halting operations of the waste treatment company involved has caused a severe shortage in waste solvent treatment capacity, the EPA will cooperate with the Industrial Development Bureau to provide temporary storage of waste solvents. EPA Administrator Lin expressed his regret for the incident and emphasized that it has strengthened the EPA's resolve to prosecute violators to the fullest extent of the law.

On July 14, a major source of drinking water for the Kaohsiung area suffered hazardous waste contamination when a waste treatment firm illegally dumped waste solvents into the Chi-Shan River, a tributary to the Kao-Ping River in southern Taiwan. Once the contamination was discovered, the Provincial Water Resource Company immediately halted all drinking water extraction from the polluted source and initiated emergency water collection from Nan-Hua reservoir and other back-up sources. The incident captured major attention due to its affect on the safety of drinking water in the entire Kaohsiung area.

The EPA reported that the contamination impacted the operations of three water treatment plants in the area, including the Ping-Ding, Kao-Tan, and Deng-Ching Lake plants. Officials ordered the supply of 3.3 million tons of water from Nan-Hua Reservoir. Additional sources, such as underground rivers and wells, were tapped, and emergency reserves from the Deng-Ching Lake Reservoir were supplied. These measures, however, still fell short of normal requirements. In all, over 100,000 homes were affected.

Following the incident, the EPA ordered the Kaohsiung County and City Environmental Protection Bureau (EPB) to undertake tap water sampling throughout the Kaohsiung area. Initial analyses indicated that volatile organic solvent levels in drinking water met current standards. However, the samples contained very small amounts (about 1 part per billion) of toluene, ethylbenzene, and xylene. The EPA indicated that these amounts are far below levels dangerous to health. Once the supply of water is restored, though, tap water will have a slight odor that will gradually recede.

Environmental agencies have determined that

the waste solvents originated from the Eternal Chemical Company (長興化工公司) and were illegally dumped by the Sheng-Li Chemical Company (昇利化工公司). After the evidence was confirmed, the EPA meted out serious punishment. Sheng-Li's waste clearance and treatment license was revoked, and Eternal's operations were shut down. Unfortunately, Sheng-li was one of Taiwan's only legal waste solvent treatment firms. Facing a situation whereby very little waste solvent can now be properly treated, EPA Administrator Edgar Lin met with the Industrial Development Bureau (IDB) to put together a temporary solution.

The EPA reported that every year Taiwan produces 52,315 tons of hazardous spent solvents, and 77,774 tons of non-hazardous waste solvents. With Sheng-li operations shut down, pressure on the island's treatment capacity will rise dramatically.

As a stop-gap measure, the EPA and IDB proposed the following:

1. Factories which cannot find treatment companies to handle their waste solvents must store it on-site, and at all costs must not resort to illegal disposal.
2. Firms shall cooperate with the IDB to find a large-scale storage facility where waste solvents can be safely stored.
3. In the near term, cooperating firms shall strive to upgrade technology and improve operations management. The IDB will also encourage companies that have excess treatment capacity to apply for permits to treat hazardous waste.
4. IDB and EPA will actively work with major affected companies and contracted disposal organizations to coordinate disposal of waste solvents.

Administrator Lin stated that, following this incident, the EPA and the IDB have explored every angle and studied every response measure. Consensus was reached in the first meeting, and Lin is confident that in a short time the problem can be smoothly solved. Lin also pointed out that this case clearly demonstrates that by harming nature we harm ourselves. Lin also spoke for himself and EPA staff in apologizing to the communities affected by the incident. He then exhorted everyone to respect the environment, and not let something like this happen again.

Administrator Lin also ordered comprehensive inspections to prevent similar cases from

happening again. Through cooperation with the Environmental Police, the EPA on July 19 discovered three illegal waste dumps near streams in Taichung County. In addition, EPA inspectors have stationed

themselves on-site at treatment companies that handle waste solvents as part of a comprehensive campaign to stamp out improper practices in the environmental protection business. ♻

Dioxin Emission Standards for Small and Medium-Sized Incinerators Under Discussion

The EPA has proposed draft dioxin emission standards for small and medium-sized incinerators. In the future dioxin emission standards for incinerators (and other waste processing facilities) will be set at 0.5 ng-TEQ/Nm³ for facilities with installed capacity below 4 tons an hour, and at 0.1 ng-TEQ/Nm³ for facilities with installed capacity above 4 tons an hour. It is estimated the new standards will reduce annual dioxin emissions by 1.09 g-TEQ/Nm³, or a 76% reduction of dioxin emissions.

To remove the threat of dioxin exposure from the public, the EPA on July 12 and 26 invited experts, academics, and representatives from the incinerator industry to hold the "Seminar on Dioxin Control and Emissions Standards for Small and Medium-Sized Waste Incinerators." The draft proposed at the seminar sets strict dioxin emission standards comparable with those in the world's advanced nations. It also sets operating criteria to reduce dioxin pollution which enterprises must comply with.

Controls on incinerators are distinguished according to treatment capacities. In the future, dioxin emission standards for incinerators (and other waste processing facilities) will be set at 0.5 ng-TEQ/Nm³ for facilities with installed capacity below 4 tons an hour, and at 0.1 ng-TEQ/Nm³ for facilities with installed capacity above 4 tons an hour.

The EPA recently contracted out an evaluation of best available control technology for small and medium-sized incinerators. Evaluation of do-

mestic industrial waste incinerators revealed that the proposed standards could be met through use of semi-dry acid removal system or bag-filter, and with the addition of active carbon the dioxin removal rate can be raised to above 98%. Including the active carbon, the cost for the entire process would not exceed 4% of the entire system operating costs.

The EPA's Bureau of Solid Waste Management points out that Taiwan has 11 small and medium-sized incinerators for general waste treatment, 62 for general industrial wastes, 17 for medical wastes, and 1 for hazardous industrial wastes. The EPA has tested 13 of these incinerators as of the present. With the exception of one medical waste incinerator, dioxin concentrations were not high at these incinerators. However, the incinerators tested would be unable to meet the new standards proposed in the draft without further improvements.

In many cases, generation of dioxin pollution is directly tied to improper incinerator operation. To avoid poor operation practices, the EPA draft includes criteria on standard incinerator operating procedures. The criteria stipulate that the burn temperature, CO concentrations, oxygen content, retention time, and other operating parameters must be monitored and recorded. By getting a handle on operating conditions, local authorities can effectively help to reduce dioxin pollution. The draft therefore stipulates that monitoring results must be reported monthly to local environmental agencies. ♻

EPA Pushes Inspection and Cleanup of the Er-Jen River

Underground smelting operations have gravely polluted Taiwan's Er-Jen River. During a tour of the Er-Jen, EPA Administrator Edgar Lin expressed his commitment to strengthen inspection and prohibition of polluting activities. With the cooperation of local government and judicial authorities, underground operators will be strictly punished for their actions. The EPA will also strongly push riverbank beautification, with visible results predicted within the next half year.

During an inspection tour of the Er-Jen River (二仁溪) on July 17, EPA Administrator Edgar Lin

expressed his commitment to a crack down and cleanup of illegal smelting operations and trash along the river's banks. Such an action will involve not only the EPA, but also joint cooperation between Tainan City, Tainan County, Kaohsiung County and the Ministry of Justice. Lin stated that he would make cleanup of the Er-Jen River one of the EPA's top priority work items, and predicted that visible results would be forthcoming in the next half year.

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Lin also noted that through this onsite inspection he was able to get a sense for the economic and enforcement difficulties faced by local governments.

The EPA points out that the Er-Ren River, which spans Tainan City, Tainan County, and Kaohsiung County, has long been polluted by illegal smelting operations and open burning and acid wash from scrap metal processors. Even after the government banned import of scrap metal and tore down a number of violators, underground enterprises still operate on the banks of the Er-Ren, contributing to local air and water pollution. Wanton disposal of waste and metal residues into the river has seriously degraded the environment. Even worse, companies illegally contracted to dispose of hazardous wastes often dump their loads into the riverbed, leading to a serious secondary pollution problem.

After coming to an understanding of the issues involved, Administrator Lin expressed that, "We will invest significant numbers of personnel from the Environmental Protection Police and the EPA Inspection Team, as well as asking local environmental groups to help oversee the situation. With resolute confidence we declare war on those underground operators polluting the Er-Ren River." Lin also went a step further. Once caught, illegal operators will be punished under both the *Waste*

Disposal Act and the *Soil and Groundwater Pollution Remediation Act*, and criminal prosecution will be turned over to the proper investigative authority.

Administrator Lin stated, "Love for the environment stems from whether or not we have built feelings between ourselves and nature. Rivers nurtured human culture and provide the essentials necessary for life. How can we bear to see them wantonly destroyed? Looking at the pollution in Er-Jen River you can see the carelessness with which Taiwan has destroyed the environment to develop the economy. The depravations visited on our environment by a shortsighted economy is a bitter sight indeed." He further stated, "My visit today has led me to understand the difficulties and needs of local government, and I solemnly declare official inclusion of the Er-Ren River cleanup as a top priority EPA work item."

An EPA official pointed out that in addition to other measures to cleanup the Er-Jen River, Tainan County, Tainan City, and Kaohsiung County will work together to remove illegal facilities and waste along the river. Following river bank beautification efforts will aim to provide the residents of Tainan and Kaohsiung with a usable recreation space. The EPA will work hard to meet the expectations of local residents, and estimates that underground smelters will be removed within the next half year. ●

Review of the Marine Pollution Control Act Off to a Smooth Start

In its review of the *Marine Pollution Control Act*, the Legislative Yuan was able to reach a consensus on the structure of the law. However, because Taiwan is an island country, all sides expressed concern with the manpower necessary to effectively control marine pollution. EPA Administrator Edgar Lin indicated that in order to implement the law, he would seek to increase relevant personnel resources, and will consider establishing a specialized implementation body.

On June 28, the Legislative Yuan's Health, Environment and Public Welfare, and Justice Committees reached consensus in support of the structure of the recently proposed *Marine Pollution Control Act*. The next step will be to initiate review of the content of the draft Act.

During the June 28 review meeting, EPA Administrator Edgar Lin provided an overview of future marine pollution control policies. Lin pointed out that control of ocean pollution is a new policy area, and that once the new law is confirmed, the EPA will

revise its budget to include a greater number of relevant enforcement personnel. Lin also stated that because Taiwan is an island, the EPA should consider whether to establish an agency with the sole responsibility of implementing marine pollution control policies.

Administrator Lin further indicated that the Act, comprising nine chapters and 60 articles, was drafted in consideration of international maritime laws and treaties. The draft stipulates that entities seriously polluting the sea through illegal dumping of waste can be fined up NT\$100 million and/or imprisoned for up to 10 years. The Act would also establish marine pollution control regions with specific water quality standards and require the collection of waste dumping fees based on type and quantity of waste. Firms engaged in ocean dumping or incineration will be required to carry out their activities within designated areas. Should such activities result in serious pollution, the competent authority will

be required to immediately adopt mitigation efforts. The responsible party can also be ordered to conduct waste remediation efforts and/or be held liable for related clean-up expenses.

In addition to regulating such things as land-based marine pollution sources, maritime construction activities, ocean-based waste treatment and disposal, and ocean dumping by shipping lines, the Act also addresses the issue of damages caused by marine pollution and stipulates how liability for such damages is assigned. Owners/operators of general vessels over 400 tons or oil and chemical tankers over 150 tons will be required to put up a guarantee or hold liability insurance against damages that result from marine pollution. Parties suffering damage will be able to directly seek compensation from the responsible party's insurance plan.

On the same day, prior to the review of the draft Act, legislators held a public hearing in order to elicit viewpoints on the proposed regulations. Dur-

ing the hearing, several academics pointed out that Taiwan's coastline forms a 1,500 km circumference and that enforcement personnel would therefore be stretched very thin. For this reason, some participants suggested establishing a specialized "Maritime Management Agency." Supporters of the Act pointed out that one of the United States Coast Guard's duties is to enforce marine pollution control policies. This suggests that increasing the ROC Coast Guard's duties to include marine pollution control would be a possible approach.

Administrator Lin asserted that the EPA will promptly respond to the comments and suggestions made during the public hearing. Once the Legislative Yuan has completed the review of the draft, the EPA will work with relevant ministries and local-level governments to formulate concrete implementation measures. Moreover, passage of the Act will signify the central government's establishment of all basic environmental protection acts. ♣

President Chen Emphasizes the Importance of Sustainable Development

During a recent visit with foreign guests, President Chen Shui-Bian emphasized the importance of sustainable development. He described his view of Taiwan as a "Green Silicon-Island" that continues to develop on a basis of humanism and sustainable development. He further stated his willingness to hear proposals for a Ministry of the Environment and Energy and promised to petition the Executive Yuan to take such an administrative change into consideration.

At the June 26, "Year 2000 International Sustainable Development Activity Exchange and Training Seminar," sponsored by the Taiwan Renaissance Foundation, President Chen Shui-Bian met with foreign attendees to express his appreciation for their special trip to Taiwan.

The seminar, which was jointly sponsored by the Taiwan Renaissance Foundation and the Ministry of Economic Affairs Water Resources Bureau, focused on water resource use and protection. During the event, President Chen expressed that the conference themes were closely tied with his vision of Taiwan's transformation to a "Green Silicon-Island." Chen further indicated to those in attendance his willingness to hear proposals for establishment of a Ministry of Environment and Energy. He said that this idea should become a topic for consideration as part of government restructuring efforts. He argued that such an agency is needed due to the

close connection between environmental protection, energy, and water resources.

Recognizing the increasingly important role played by the international environmental protection movement, President Chen stated that we only have one planet and that we should increase our respect for the natural environment. He further said that this generation has no right to destroy the environment. Moreover, the so-called "new political center" is all about finding solutions to a range of difficult issues, and that economic growth should therefore proceed hand-in-hand with preservation of the environment.

Chen further explained that as part of his "Green Silicon-Island" policy, he hopes that by 2010 Taiwan will become a leader in information technology applications and the digital economy. He emphasized, however, that his vision is not only focused on technological advancement. Even more important is that the island embrace humanism, the green revolution, and sustainable development.

Finally, Chen specially indicated the importance of balance and sharing. He said that only if economic development and environmental protection can strike a balance can everyone share in the benefits of economic growth and environmental protection. The president emphasized that this shall be one of Taiwan's major goals. ♣

Feature Article

Draft Industrial Waste Treatment Plan In the Works

The EPA and Industrial Development Bureau have completed a draft *Industrial Waste Treatment Promotion Plan*. The plan aims to reduce the growth rate of industrial waste to zero by 2004 through the encouragement of waste recycling and reuse. At the present, excess incinerator capacity will be used to treat general industrial wastes while the Industrial Development Bureau promotes construction of treatment facilities in industry parks. The plan should soon be sent to the Executive Yuan for approval.

From day one as EPA Administrator, Edgar Lin has demonstrated his commitment to resolving the problem of industrial waste. Early on the Administrator requested the EPA to devise a concrete plan for industrial waste treatment, and to date the plan has for the most part been completed. Recently the EPA organized the "Industrial Waste Management and Assistance Seminar" with the Industrial Development Bureau to make joint revisions to the draft *Industrial Waste Treatment Promotion Plan*. The completed draft plan should soon be sent to the Executive Yuan for approval.

Through cooperation between the EPA and IDB, the plan aims to reduce the industrial waste growth rate to zero by 2004. This will be done through a policy which prioritizes waste reuse and recycling over incineration and other types of intermediate treatment. The IDB will most likely bear responsibility for hazardous waste and waste sludge. Additionally, a portion of general industrial waste will be incinerated together with municipal wastes after reassessments of environmental impact can be conducted for those incinerators with excess capacity.

The new plan was personally discussed last month by EPA Administrator Edgar Lin and IDB

Director General Yen-Shiang Shih (施顏祥). Stated goals of the plan include a zero annual growth rate for the amount of industrial waste requiring treatment and disposal by 2004, treatment of general industrial waste at municipal incinerators, and completion of plans for installation of industry park waste treatment facilities. The plan also aims to raise the annual waste reduction/reuse quantity from the current 5.9 million tons to 8.6 million tons, the annual capacity of intermediate treatment facilities from 2.62 million tons to 8.99 million tons, and final disposal capacity from 1.1 million cubic meters to 42.5 million cubic meters.

Excess capacity brought on line as Taiwan's municipal incinerator projects are completed will be used to treat a portion of general industrial wastes. The EPA expressed that because early incinerators plants were designed in principle to treat municipal wastes, regulations require a reassessment of environmental impacts before treatment of industrial wastes is legally possible.

Revisions to the *Waste Disposal Act* last July stipulate that within two years of promulgation the competent authority for industrial and science parks must complete planning for industrial waste treatment facilities. For this reason, the draft *Industrial Waste Treatment Promotion Plan* relies mainly on the IDB to complete planning for park treatment facilities. Companies outside of industry parks will rely mainly on treatment at incinerators or landfills.

It is still undecided which of the two organizations will hold responsibility for the establishment of final disposal sites. After resolution of this final issue the plan will then be presented to the Executive Yuan for approval. 

Edgar Lin Urges Greater Interaction Between Environmental Agencies

EPA Administrator Edgar Lin recently called his first joint meeting of environmental agencies. At the meeting, Lin exhorted local governments to strictly enforce regulations and promised greater interaction between central and local agencies. The Administrator also pointed to industrial waste as the most important task at hand. He expressed hopes to resolve this long mounting problem by building more industrial waste treatment facilities through central-local government cooperation.

On June 29 EPA Administrator Edgar Lin

called a special joint meeting session to strengthen interaction between central and local government environmental agencies. The director generals of twenty three special municipality, county and city environmental protection bureaus (EPBs) were called to the meeting to discuss the promotion of environmental work. At the meeting, Administrator Lin expressed his hopes that EPB heads work together to protect the dignity of the environment by

aspiring to carry out their work by the letter of the law and flatly denying the view of environmental protection bodies as having only a decorative role to play in the government. He invited them to support the EPA in resolving a critically problematic issue, that of industrial waste.

Since assuming office Administrator Lin has repeatedly emphasized the importance of local governments in enforcing environmental regulations. Thus, he expressed his willingness to fully empower local authorities and strengthen coordination with the central government. Lin stated, "Without the cooperation of local government even good policies will fall short of their mark. For this reason, interaction between the central and local governments is extremely important." To express his respect for local voices, Lin said that in the future the frequency of these joint EPA work meetings would be increased from once every three months to once every two months. The Administrator expressed hopes that at these meetings EPB director generals can share with each other new practices or work at their bureau and also offer the EPA a reference for new policy

design.

Administrator Lin also said, "The most important task at hand for the EPA is securing the help of local EPB heads in industrial waste treatment. Our initial inclination is to promote installation of large scale industrial landfills in north, central, and south Taiwan. With this the work of industrial waste treatment will finally begin to see the break of day." Following, Lin pointed out that in support of this goal the EPA's Central Taiwan Division will be restructured into northern, central and southern environmental protection centers. The centers will be charged mainly with the task of performing audits to get a firm grip on the quantity and quality of industrial waste.

As for resolving local difficulties with financial and human resources, Lin promised his full support. However, because all EPBs have a good deal of room for improvement, Lin hopes that EPBs will use new ways of thinking and doing to implement their work. At the meeting Lin emphasized, "Our first priority in environmental protection is to create a clean and comfortable environment." ❁

Traditional Activities of Concern During Review of Noise Act

The Executive Yuan proposed amendments to the *Noise Pollution Control Act* which would greatly increase the stringency of existing noise control regulations. A joint committee meeting of the Legislative Yuan recently began review of the Executive proposed changes and have already reached a broad consensus on most issues. However, some legislators seek to increase prohibition of disturbances created by traditional activities such as weddings and funerals.

To reduce noise pollution throughout Taiwan, the EPA has proposed amendments to the *Noise Pollution Control Act*. After the EPA revisions were reviewed by the Executive Yuan the bill was passed on to the Legislative Yuan. At the Legislative Yuan, on July 3, the Health, Environment, and Public Welfare, Economy and Energy, and Judicial Committees held the initial joint review session for the draft.

At the review session, EPA Administrator Edgar Lin pointed out that the *Noise Pollution Control Act*, promulgated in May 1983, has not been amended in over eight years. However, the current round of revisions has been necessitated by the rising demands for residential tranquility voiced by Taiwan's citizens. The proposed draft amendments significantly expand regulatory controls within the Act. Expanded regulatory controls include new

sections on ambient noise levels, public and private sites, vehicles, land based transportation systems, and air transport.

Among others additions, the draft amendments stipulate that during the evening hours the use of firecrackers or loudspeakers for electoral activities is prohibited. Furthermore, noise emitted from vehicle anti-theft devices may not persist more than 30 seconds after activation, with violations punishable by a fine between NT\$1,500 and 15,000.

In terms of highways, expressways, railways, and Taiwan's mass rapid transit system (捷運系統), the draft mandates adoption of appropriate noise prevention measures or restriction of travel times and speeds to reduce adverse impact on noise levels. In addition, future noise control regulations will proceed based on land zoning and time period. Land zoning is designated as either residential, commercial, industrial or special noise control, while time periods are divided into morning, midday, evening, and night. Control measures will vary between the different zones and time periods to improve residential environments.

Legislators involved in review of the amendments are in general agreement on the Executive

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Yuan proposed version. However, some legislators have requested the EPA to enact stricter controls on noise from traditional activities such as weddings and funerals. Legislator Jao Yung-ching pointed out that restrictions should be loosened on the requirements necessary to bring a civil suit to allow the average citizen to join in the fight against environmental pollution. Legislator Jao thus appealed to Administrator Lin to help update the civil suit clause in the draft amended Act. Legislator Chou Ching-yu (周清玉) approached the issue of noise pollution from an enforcement perspective. Legislator Chou expressed her worry that the proposed amendments

would amount to an announcement only and be impossible to enforce. If members of the public are truly concerned with noise in their neighborhoods from wedding or funeral activities, how controls are implemented must be considered.

In response to the legislators concerns over the enforcement of noise controls on traditional activities, Lin noted that he would continue research and anticipates proposal of concrete policy or enforcement measures within the next three months. Because a general consensus already exists concerning the draft amendments, only a short discussion was necessary before a resolution was passed to proceed to an article by article review at a later date. 

EPA To Set Recycling Guidelines for Fast Food Industry

The pollution problems arising from fast food consumption are receiving greater attention. Because fast food restaurants use a very large number of disposable containers, the EPA hopes the industry can take the initiative to implement container sorting. Moreover, environmental groups feel that such an initiative would be a good approach to further environmental education. Restaurant owners have expressed their willingness to support recycling efforts, but they have concerns that such activities are not clearly defined. In response, the EPA will establish guidelines to help restaurants implement effective policies.

Fast food culture has taken root in Taiwan. Because revenue from fast food increases apace, and due to the large amount of waste arising from disposed food containers, the EPA has begun to evaluate how fast food restaurants might implement recycling systems.

As part of this policy initiative, the EPA recently met with fast food and beverage chain representatives as well as concerned environmental groups. At the July 19 meeting, the concerned parties discussed how fast food restaurants could promote recycling.

The EPA's Recycling Fund Management Foundation indicated that if fast food restaurants implemented in-store sorting of disposable items, the move to begin recycling would be a relatively easy step. Items to be sorted would include paper cups, paper lunch boxes, and even left-over food. However, because most restaurants do not currently implement item sorting, all waste is mixed

together resulting in nothing more than garbage. Officials have pointed out that the EPA holds high expectations for fast food restaurants and hopes that stores will move on their own to voluntarily support the government's policy. Officials went a step further and reminded restaurant owners that the items used by fast food shops such as paper cups, food boxes, and polystyrene containers are all already regulated by existing laws. If the fast food industry does not take the initiative, the EPA may consider taking the "command and control" path.

A representative from an environmental interest group in attendance of the meeting stated that whether or not recycling programs are successful depends mainly on proper environmental education for the public. He went on to point out that fast food restaurants are excellent locations for educating the public on environmental issues. Considering the large number of consumers eating at fast food restaurants, the outcome of a recycling program would likely be successful, provided an effective education plan were implemented. He explained that many fast food chains have global operations, but this does not mean that recycling activities would be implemented equally well in all countries. A successful recycling program in a given country would depend on the level of environmental education. He therefore argued that the government should provide concrete guidance and forge positive,

cooperative relationships with restaurant owners and managers.

Fast food restaurant representatives stated that they would be willing to support the government's initiative, but they are concerned that the recycling fees charged by legal recyclers are too high. And because restaurants cannot pass the cost through to consumers, they would be placed in a difficult situation. They also pointed to reports stating that much of the waste collected by recyclers ends up being incinerated anyway. Therefore, they are not sure if proper recycling

can effectively occur. They felt, however, that if the EPA were to set down clear implementation principles, they would be happy to support the effort.

In sum, all participants at the July 19 meeting felt that in-store recycling has potential and fast food industry representatives expressed their willingness to go along. As a result, the EPA decided to promptly draft related guidelines and asked local-level environmental agencies to put forth feasible implementation measures within the next three months. 

Recycling Industry Contributes NT\$35 Billion Annually In Value Added

Everyone knows that recycling helps the environment, but it is less well known that recycling directly stimulates economic growth and employment opportunities. A study recently completed by the EPA reveals the annual production value of recycling to be NT\$71.5 billion, with an estimated total value added of around NT\$35 billion. Recycling also provides around 1.95 million job opportunities, or 2.1% of the national total.

To better understand national recycling trends and their interrelation with economic activities, the EPA contracted National Taipei University (NTU) to complete an analysis of production value and job opportunities related to the resource recycling and reuse industry. The report resulting from this project was recently completed and released.

Based on NTU's research, in 1998 recycling enterprises generated a total production value of NT\$26.9 billion, while reuse enterprises accounted for NT\$44.6 billion in production value, a grand total of NT\$71.5 billion. After subtracting total expenditures, the resource recycling and reuse market generated around NT\$35 billion in value added. Of the total value added, recycling accounted for NT\$15.5 billion and reuse NT\$19.5 billion.

In terms of employment opportunities, the reuse and recycling market provides around 1.95 million jobs, or 2.1% of the national total. Recycling provides around 1.82 million jobs, while reuse enterprises provide around 7,000 job opportunities. The report specially points out that under the current trend towards a high-tech based economy, loss of unskilled jobs is a severe problem. In this sense, recycling and reuse enterprises

are an important channel to absorb many of those unsuited to work in high technology sectors.

Furthermore, by promoting recycling and reuse Taiwan has significantly reduced pressure on municipal waste treatment. The report points out that 88.8 million tons of household wastes were collected in Taiwan during 1998, a daily average of 1.135 kg of trash per person. In 1999 a total of 85.6 million tons was collected, a daily average of 1.082 kg per person. This represents an average daily reduction of 0.053 kg per person, and a stabilization of trash growth rates.

The EPA stated that based on 1998 figures, around NT\$3.2 billion in value added could be generated from the 2.6 billion in container recycling fees turned in by container importers and manufacturers. In terms of other articles, for example four items, motorcycles, tires, lubricants, and lead batteries, enterprises turned in a total of NT\$2 billion in recycling fees, but around NT\$31.8 billion in value added was generated through their recycling. In this case the value added far exceeds the recycling fee paid by enterprises.

Additionally, the report points out that, based on the EPA's experience in promoting environmental policy, the cost of public education and communication is very high. The future challenge for environmental agencies is how to efficiently use their limited resources to strengthen environmental education for lower level workers. Raising environmental awareness among recycling and reuse personnel is an effective method to reduce secondary pollution and raise competitiveness in the sector. 

Taipei City's Per Bag Trash Collection Fee Off on the Right Foot

In July, Taipei City initiated a volume based trash fee collection method based on the sale of special trash bags. After the first month of implementation, garbage was reduced by 37%, and the recycling rate increased from 2.5% to 10%. After reviewing the program, EPA Administrator Lin expressed his approval. He pointed out, however, that garbage fee collection systems must take into account local conditions and that each area will have to make adjustments as needed.

On July 1 of this year, Taipei City initiated a per bag method of assessing trash collection fees. Because of the high degree of interest generated by this new policy, the Taipei City Department of Environmental Protection (DEP) has kept very detailed statistics and frequently announced their results. The DEP indicated that for the three days following July 1, garbage was generated at a rate of 1,757, 1,397, and 1,989 tons per day, respectively. Compared with the 1999 average daily amount, 2,970 tons, figures from these three days suggested a 42.4% reduction. This positive trend was born out through the first month of implementation (July 1 to 31), with an average 37.4% reduction in trash for the month.

Along with reduction in garbage generated,

the amount of items recycled increased. On July 1 and July 3, the rate of recycling was 175 and 240 tons per day, respectively (July 2 was a Sunday, thus no items were collected for recycling). These figures were four times greater than the 1999 average of 2.5%. These initial results continued throughout the month, leaving an average recycling rate in July of 10.2%.

Over the month, the 37.4% reduction exceeded the EPB's goal by 4%. The recycling rate was just at the lower limit predicted by the EPB. Moreover, the percentage of trash bags discarded illegally or not placed in the special DEP trash bags were both below 1%. This suggests that the aggressive publicity campaign launched by the City Government in the months preceding implementation of the new system was very successful. Thus from an overall perspective, trash reduction, recycling, and compliance, it appears that the City's per bag trash collection fee system is off to a very good start.

It must be noted, however, that the DEP has discovered some garbage mixed in with recyclable

News Briefs

Gravel Pit Air Quality to Be More Tightly Controlled

Without effective air pollution control measures at gravel extraction sites, these work areas easily create large amounts of dust and other pollutants leading to environmental degradation and health consequences for workers and the general public. In response, the EPA's Central Taiwan Division initiated a national gravel pit inventory and investigation plan in August 1999. The plan targets sites that have not put in place proper pollution control measures and, in accordance with the Air Pollution Control Act, supervises the strengthening of audits and penalization on the part of county and city environmental enforcement agencies.

EPA Promotes E-Government Effort

On July 3, the EPA's WWW home page was upgraded with the intent to more directly convey environmental protection information to the general public. The EPA's electronicization effort is not just cosmetic, however. The EPA's Bureau of Environmental Monitoring and Data Processing indicated that, in support of the Executive Yuan's wider push to electronicize government policy implementation, the EPA on July 1 began testing an electronic-based official document exchange system that will run in parallel with the existing paper-based system. This is in preparation for a complete phase out of the paper-based system in August.

Public Hearing on Polystyrene Controls Held

To address the environmental problems surrounding the disposal of polystyrene ("styrofoam") items, the EPA convened a public hearing to review control policies. Even though environmental interest groups largely support a ban on polystyrene utensils, industry representatives feel that a complete ban would be too excessive. The EPA stated that it will consider the opinions expressed by the various parties in attendance and propose some form of control measure in the near future.

Control of Heavy Metal Contamination Shows Steady Results

Immediately after taking office, EPA Administrator Edgar Lin expressed his desire to tackle heavy metal contamination in Taiwan's rivers. Kuo-Tung Roam, Director General of the EPA's Bureau of Water Quality Protection pointed out that measures to audit and control electroplating and metal surface treatment factories are already underway. By the end of June, inspections had occurred at 3,455 facilities in the eight counties and cities with the highest concentrations of heavy metal pollution sources. As a result, 976 factories (including 229 legal and 747 illegal operations) were permanently shut down and 1,202 facilities were referred to either local government agencies, building inspectors or tax authorities for further scrutiny. In addition, over NT\$6.3 million in fines have been issued. These results clearly indicated that progress is being made on this front.

items. When more garbage is mixed in with recyclable material, the efficiency of the recycling process and the burden to recycling personnel are greatly increased. In response, the DEP announced that it will strengthen monitoring activities, public education, and gradually implement a system whereby different types of recyclables are collected on separate days.

To deal with the sudden increase in the collection of recyclable items, the Taipei City DEP said that it will also need to strengthen downstream processing of recyclables. In addition to increasing the number of recycling facilities, the DEP will contract operation of some of its sorting facilities to private

enterprises.

After receiving the DEP's report, EPA Administrator Edgar Lin openly expressed his approval of the new system. He also pledged the EPA's support and assistance wherever necessary. On the question of whether this measure would be implemented island-wide, Lin stated that in Taipei the pre-existing trash pickup system facilitated the adoption of the per-bag approach. Other locations may not possess such favorable conditions. Handling of garbage collection fees in other areas must proceed according to the spirit of local autonomy, and each county or city must decide for themselves which path to follow. 

EPA Plans Certification Program for Air Quality Monitoring Stations

Taiwan has more than 200 continuous air quality monitoring stations islandwide and station density is the highest in the world. In order to compile resources and raise monitoring quality, the EPA is currently drafting an air monitoring station certification system, and it is expected that this system will be implemented later this fiscal year. In the future, data from certified monitoring stations will be used by the EPA to render decisions on degree of compliance with air quality standards.

The number of continuous air quality monitoring stations in Taiwan is high, in fact the island has the highest monitoring station density in the world. Of the island's 200 monitoring stations, 72 were established by the EPA, 30 by local-level environmental departments, and nearly 100 by large industrial firms such as Formosa Plastics, Taipower, and Chinese Petroleum Corp.

Despite, however, the large number of monitoring stations, the quality and reliability of the generated data is not necessarily of a high degree. To remedy this situation, the EPA this year initiated an air quality monitoring station certification system, and performed demonstration certification of local environmental protection bureau (EPB) monitoring stations. This approach is expected to improve the effective compilation of monitoring data.

The EPA's Bureau of Environmental Monitoring and Data Processing indicated that environmental agencies and industrial firms had previously installed monitoring stations to suit their own needs. According to Article 6 of the *Air Pollution Control Act Implementation Rules*, air quality monitoring stations used to judge compliance with air quality standards must either be established by the EPA or certified by it. In 1993, the EPA established an islandwide monitoring network comprised of 72 stations distributed among Taiwan's counties

and cities. The certification system will be implemented in two stages. First, a demonstration certification program will be implemented among county and city level environmental protection departments and then expanded to include monitoring stations controlled by industrial firms.

Monitoring station certification will occur through both document-based review and on-the-spot certification methods. Stations that have their data certified for quality and reliability will be able to include their data in Taiwan's air quality monitoring network and thereby contribute to more complete coverage of the area in question. The EPA pointed out that local environmental agencies are currently willing to seek certification for 21 monitoring stations. In the future, stations that have received certification, and hence the EPA's stamp of quality guarantee, will be able to meet monitoring quality requirements. On the other hand, data from non-certified stations will be used only for reference.

Agencies or firms desiring to achieve certification for their stations must comply with system and function review standards. System review mostly focuses on inspecting the calibration of monitoring instrumentation and monitoring location. Function review focuses on the accuracy of monitoring data and other instrumentation operation and management analyses. Once certified, stations must be operated in accordance with proper procedures. The EPA will conduct follow-up inspections to ensure continued data quality.

EPA officials indicated that because this is an initial certification plan, a demonstration program must first be put in place. The number of cities and counties that have automatic monitoring stations is small, and there are still 17 counties and cities that have not joined the certification program. 

Consensus Reached on Adjustment to Computer Recycling Fee Rate

The current recycling rate for computers is below that originally anticipated when the computer recycling fee rate was set. As a result, the computer recycling fund has accumulated an account surplus in excess of NT\$200 million. In response, the EPA has decided to lower the recycling fee rate for information technology items. Thus, the recycling fee for notebook computers will drop from NT\$90 to NT\$52, while desktops will drop from NT\$304 to NT\$196. The changes are anticipated to go into effect beginning January of next year. After hearing opinions from all parties, the EPA will consider whether or not the fee can be implemented earlier this year.

Since comprehensive computer recycling began in June of 1998 until June of 2000, the EPA's recycling fund has accumulated an account surplus from computer recycling in excess of NT\$200 million. On July 20 the EPA held a public hearing, during which time it was explained that the original recycling rate fee for computers was set based on a 100% recycling rate. However, recycling rates have remained slightly lower than the original target value (77.5% at the time of the fee rate review), creating the current surplus in the recycling fund. Thus, when setting the 2001 recycling fee rate the target recycling rate was reset to 77.5%. The existing surplus will be spread out over the next three years to compensate for the drop in recycling fee revenues.

The EPA will reduce the current recycling fee rate by 1/3 or more and hopes to balance revenues

and expenses in the recycling fund next year. The new rates are anticipated to go into effect January of next year. At this time the recycling fee for notebook computers will be reduced from NT\$90 to NT\$52, while desktop computers will drop from NT\$304 to NT\$196. The EPA's Recycling Fund Management Committee expressed that if there is still an accounts surplus after the new fee rates are implemented further adjustments can be made.

In addition, collection of recycling fees for printers will most likely begin November of this year. The rate for A4 ink jet or dot matrix printers will be NT\$108, A4 laser printers NT\$137, and A3 ink jets NT\$134 (using an estimated printer lifespan of six years). However, industry representatives have expressed doubts about the recycling fee rate ratios for notebook computer and printers considering the different monetary value of the respective products. In response, the Chung-Hwa Institution for Economic Research, the organization charged with setting recycling fee rates, expressed that there is a set formula and multiple factors considered to ensure that the cost of recycling printers is reflected in the recycling fee rate. For example, using the estimated six year lifespan, after recycling begins nearly 610 thousand printers could be recycled. To further ensure equitability, the target recycling rate for printers was set at 77.5%, the actual recycling rate for computers during the second half of 1999. ♻

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