



Feature Column

Air Pollution TQC System Underway by 2007

Taiwan's air pollution total quantity control (TQC) system is being implemented in two main stages, establishing controls at first through the Class III air quality control region system, and later through the TQC system. Starting in January this year (2003), the EPA has designated the Kaohsiung-Pingtung air quality zone as a demonstration site for air pollution TQC measures. Since that time, concrete results have been attained, with air quality showing marked improvement by 58%. It is expected that the air pollution TQC system will be formally set in motion in the Kaohsiung-Pingtung area in 2007, after which emissions trading will also commence.

Stationary Pollution Sources Post Greatest Emissions

Taiwan's environmental load has increased over the years as a result of heightened economic development in the 1970s, a high density of high-polluting industries, and a continual rise in the number

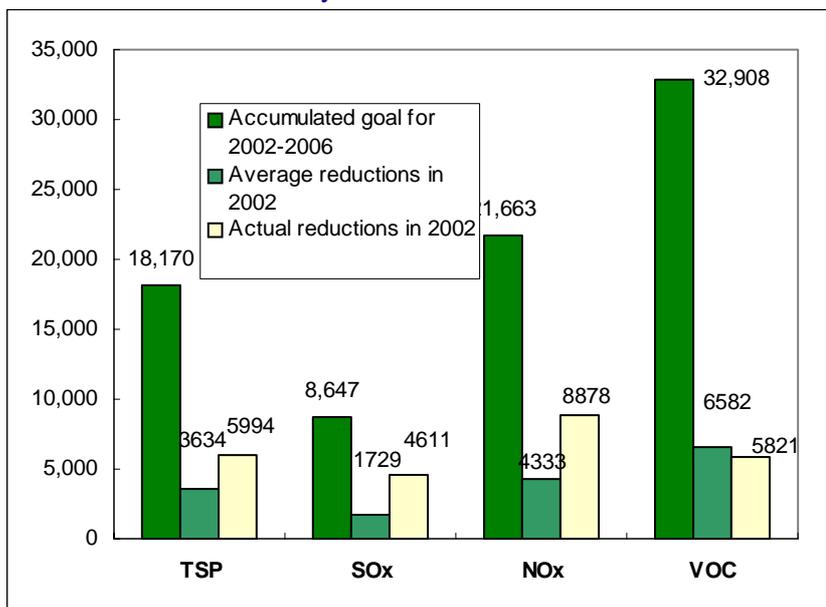
of transportation vehicles. These factors have also caused the state of air pollution to worsen over time, reaching a period of peak air pollution in the 1980s. Since its establishment in 1987, the EPA has advanced various air pollution control measures. In addition to setting emission standards, the EPA also initiated a permit system for stationary pollution sources and began collecting air pollution control fees. While these measures have brought about noticeable progress, Taiwan has still not actualized its ultimate goals in improving overall air quality.

Statistics on domestic air pollution emission volumes in recent years

reveal that the ratios of oxysulfides and suspended particulate matter from stationary pollution source emissions have already climbed as high as 95% and 90% respectively. Such volumes indicate that stationary air pollution sources are imposing acutely negative environmental consequences. To effectively manage the conduct of those operations contributing to air pollution problems, the EPA has been incrementally introducing several control strategies. The first stage expanded the number of sites required to undergo thorough inspections to a total of 18,000 sites during the years 1989 to 1994. The second stage entailed setting up a

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Air pollution TQC reduction goals over the years

permit system and setting specific control standards based on the characteristics of each individual industry. To date, controls and emission standards have been established for already 20 different industries. The third stage began this year (2003), and involves gradually incorporating stationary pollution sources into a TQC system according to region and in stages.

BACT Implemented in Stages

TQC is being implemented in two primary stages. The first stage is based on the three control regions set up in Article 6 of the *Air Pollution Control Act*. The first stage includes: 1) advancing the emission volume report system, 2) requiring newly established and modified pollution sources to ac-

in October 2002. Those businesses with surplus emissions credit can either reserve or sell their emissions credits. Although the standards are comparatively strict for newly established businesses, before 2007 businesses are not required to purchase emission credits, and are obliged only to meet BACT requirements. However, in the future if a business is unable to attain even reasonably available control technology (RACT) standards, they must then purchase emission credits from other enterprises. Businesses within the same air quality zone can mutually trade emissions between each other.

It is necessary to promote a TQC system to make up for inadequacies in concentration controls, which formerly only targeted individual emission volumes.

Pollution concentration controls adopted for stationary pollution sources formerly targeted individual emission volumes. However, there was no way to develop a comprehensive and effective standard to control the intensity of overall activities at pollution sources. Thus it was necessary to promote a TQC system to make up for inadequacies in concentration controls. According to Articles 8 through 12 of the *Air Pollution Control Act* (空氣污染防制法), total quantity control connotes that the EPA sets required reduction rates for each stage of total emission volume reductions according to the air quality and conditions of each designated region. Moreover, the EPA will set reduction goals and a schedule by which reductions will be put into effect for each pollution source.

As for air pollution problems in Taiwan at present, in 2001 the Kaohsiung-Pingtung air quality zone posted the highest percentage of poor air quality days (PSI>100) among all regions, with 8.13% of poor air quality days compared to 2.87~5% for other regions, exhibiting much more serious air pollution than others.

cord with Best Available Control Technology (BACT) and Allowable Increase Limits, 3) implementing reduction measures during periods of high pollution, and 4) drawing up an approval process for emission volumes as well as rules for allocating reductions. The timeline for this stage lasts from 2003 to the end of 2006.

The second stage is based on the TQC zones implemented in Article 8 of the *Air Pollution Control Act* and will commence in 2007. The second stage entails: 1) approving pollution emission volumes, 2) designating reductions for stationary and mobile pollution sources, 3) administering emission volume reductions through government agencies, 4) generating sufficient credit for emissions trading, and 5) implementing an emissions trading system.

TQC targets include existing and newly established stationary pollution sources, and controls will be carried out incrementally, first starting with new facilities, and later extending to existing facilities. For example, starting in 2007 the EPA will require new and modified pollution sources to install BACT that was announced

As for implementation results of BACT so far, by the year 2002 already 200 out of 214 (93%) newly established or modified stationary pollution sources took the initiative to adopt BACT. The total amount of capital invested in pollution control measures reached NT\$580 million. The outcome of this was particularly evident with regard to particulate matter, which reached a control efficiency of over 95%.

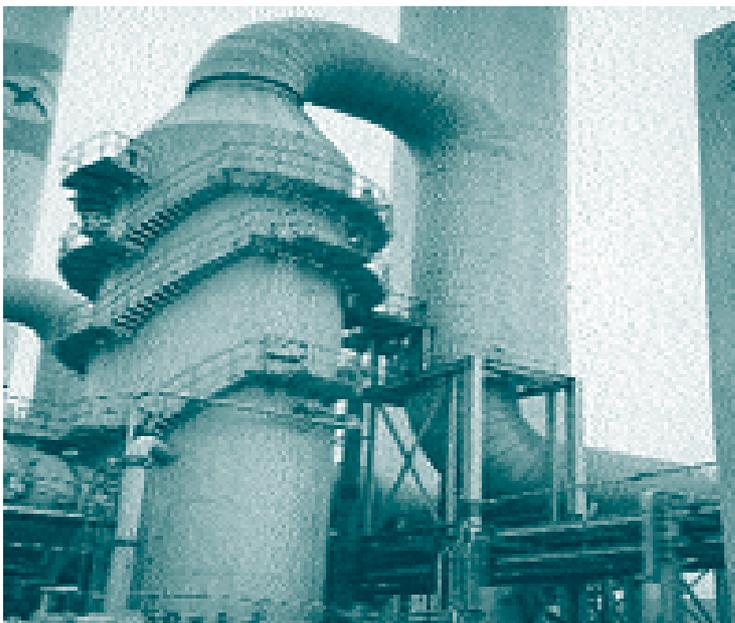
2007: TQC in Kaohsiung-Pingtung Area

The promotion of TQC will help attain air quality improvement goals set forth in the National Environmental Protection Plan (國家環保保護計畫), which aims to reduce the percentage of days in which PSI>100 to only 2% by the year 2006, and 1.5% by 2011. For the special case of the Kaohsiung-Pingtung air quality zone however, the percentage of days in which PSI>100 should decrease to 6% by 2006 and to 4% by 2011.

The primary controls over stationary pollution sources in the Kaohsiung-Pingtung region comprise controls stipulated for Class III air quality control regions, as well as regulations governing air pollution control facilities for construction projects, filling station va-

por recovery controls, VOC controls and fuel oil controls. Actually, owing to combined efforts of central and local governments, the air quality of the Kaohsiung-Pingtung air quality zone has already shown marked improvement. The percentage of poor air quality days has posted a 58% improvement over six years, dropping from 18% in 1996 to 7.45% in 2002.

Future plans for the TQC system first call for all related regulations to be in place. Pending revisions include designating reduction methods for existing stationary pollution sources within the control zones, incorporating mobile pollution sources into the TQC system, and reinforcing regulations on economic incentives for emissions trading. Other future revisions entail drafting methods for determining tradable emission credits (including stationary, mobile and fugitive emission sources), drawing up guidelines for how the government should open up emissions for trade and drafting methods for designating industries and requesting them to reduce pollution. Also, in the future the EPA will draw up a prototype exchange system as a basis for continued promotion of emissions trading in the future.



Improved functioning of NOx control facilities aids in reducing air pollution

In the long term, the EPA will also establish mechanisms to review and revise goals so as to ensure continuous improvement. Year on year air quality analysis data and model evaluations will be referred to when setting advanced operating mechanisms to future air quality improvement goals. Within the database information system, the EPA will establish a review system for stationary pollution source emission volumes to make it easier for local environmental protection agencies to look up information.

Waste Management

Tightened Waste Control for Nine Industries

Harnessing stricter and more effective control over the industrial waste flow, the EPA has focused attention on nine new industry categories, including zoo wastewater treatment facilities. These nine categories will be added to regulatory listing requiring the industries to report their industrial waste flow. The future direction of waste control work aims to gradually broaden the scope of what is considered industrial waste through such regulations.

According to EPA statistics, industrial waste accounted for 85% of all waste in 2002, while household waste made up less than 15% of all waste. Ever more stringently tracing the industrial waste flow,

The current information system for managing existing pollution sources adopts a distributed database management system, making it difficult to get an immediate understanding of the extent of control that each local government has on their own situation. Therefore the EPA is considering formatting all such information to fit the EPA's environmental database system in the future. The EPA also plans to revise and update the database every two years in the future.

the EPA plans to include under regulatory listing the waste generated by even more industry categories, requiring those industry owners to report the flow of their industrial waste.

The EPA convened 50 of the nation's related industry representatives and local environmental protection bureaus (EPBs) to attend a public hearing on August 21. All of the designated industries to be newly added under this waste management regulation were invited so that the EPA could find out each industry's views toward the new announcement.

After integrating the concerns voiced by industries during the public hearing, a total of nine industries were designated to be announced in this regulatory listing, including zoo wastewater management facilities, recycling

management enterprises for mandatory recyclables, three types of waste clearance or disposal organizations (classified by status of ownership and financing, which can be either public or private), medical care groups, environmental analysis service enterprises, automobile maintenance businesses, and photo developing businesses.

Those industries included in the announcement will not be allowed to treat their waste as general waste and will be required to handle their waste according to the *Criteria Governing Methods of and Facilities for Storage, Clearance and Disposal of Industrial Wastes* (事業廢棄物貯存清除處理方法及設施標準). This also entails that they will have to entrust professional clearance and disposal enterprises to handle their waste. Article 31 of the *Waste Disposal Act* (廢棄物清理法) stipulates that industries of a specified scale as announced by the EPA must submit an Industrial Waste Clearance and Disposal Plan (事業廢棄物清理計畫書) before the specified deadline. The business can begin operations only after their plan is reviewed and approved by the competent authorities. Up to August the EPA had already announced the first and second groups of established industries under regulatory listing. Each enterprise is required to fill out the Industrial Waste Clearance and Disposal Plan on the Industrial Waste Control Center's online report system before the deadline. This measure will help the EPA get a better handle on the flow of industrial waste.

The EPA originally planned to include motorcycle maintenance businesses and veterinarian services in this regulatory listing, however during the public hearing, industry representatives indicated that these two industries only generate a limited amount of waste.

Moreover, the characteristics of those industries would pose high costs for regulatory listing and a great deal of their waste can be easily recycled through existing recycling systems. Numerous local EPBs held similar views toward this issue and therefore it was decided at the meeting that motorcycle maintenance businesses and veterinarian services would not be included in the regulatory listing at this time.

However, these two industries may be considered for regulatory listing in the future depending on

General Policy

Bidding Begins for Third Environmental Science and Technology Park

The first and second Environmental Science and Technology Parks (ESTP) in Taiwan are situated in Kaohsiung and Hualien Counties, and have already commenced the stages of inviting firms and undertaking environmental impact assessments, respectively. Encouraging all counties and cities to compete for the bid to establish the third ESTP, the EPA will welcome applications from local governments from the end of August. Except for outlying islands and Kaohsiung and Hualien Counties, which have already been chosen, all localities are on an even par to apply for this opportunity, and as long as proposed locations meet site condition requirements, all have hope for eligibility.

Since September of last year, the EPA began actively promoting Environmental Science and Technology Parks (ESTP) with a total budget of NT\$5 billion, looking to set up three parks, one each in northern, central and southern Taiwan. After approval of establishment plans for the southern and northern regions in March, each became actively involved in the work of seeking firms and making modifications to the land. (For details, see EPM Volume VI, Issues 2 and 5.)

Decisions regarding the location of the third park and whether or not there will be a fourth site depend on Executive Yuan approval

the status of cooperation from industries and local EPBs.

The announcement of new industry categories to undergo regulatory listing will have an impact on the rights and interests of several tens of thousands of businesses. At present, the EPA is deliberating views from all sides and revising the content accordingly. The new listing will be announced in the near future.

For more information, please call 02-2311-7722 ext. 2622

of project contents. It was originally decided that in principle only three parks will be established, but during the last selection process, there was no participation from the central region and so only two parks were approved. However, there were many unchosen and non-participating counties and cities at the time of the previous two selections, and many of these came to the EPA indicating their desire to compete for the establishment of another site. Therefore, while still actively advancing the first two parks, the EPA has already formally started the selection process for the third ESTP in view of many candidates' keen eagerness to participate.

Currently the EPA is drawing up work documents regarding the selection of the third park. Application requirements have already been posted on the Internet. Those interested in participating should inquire with the EPA Department of Waste Management, which is responsible for work in the park.

As the Kaohsiung County Benjhou Industrial Park (本洲工業區) in the south has already secured land for the park, subsequent planning and invitation of firms is coming along faster than the ESTP in Hualien. It is expected that after the document to invite firms is announced in September, Benjhou Industrial Park will be able to immediately start construction work and set up factories. However, many firms have indicated that the proposed land costs of NT\$30,000 per ping are too expensive, and in order to increase the willingness of firms to establish in the park, the Kaohsiung County Chief Yang Ciou-sing (楊秋興) has promised that the county government and the Taiwan Industrial Development Corporation (台開公司) will discuss countermeasures to lower land costs.

As for the northern ESTP, the Hualien County government has chosen an engineering consultancy firm to be the main consultant for the design of the park plan, and now is in the process of modifying the land, undertaking environmental impact assessments, and drawing up a plan for the park. It is expected that the park should be able to commence activities by the end of the year.

With regard to inviting firms, the EPA emphasizes that ESTPs should use the following screening principles. The firm should be in accord with the promotion of national environmental policy and should aim to resolve current national environmental problems. It should also seek to make up for

lacks in national environmental technology, advance Taiwan's environmental technology, and advance the greening of industry. Each park should actively seek national and international firms in the areas of hi-tech recycling technology, hi-tech environmental technology, and ecological industries. In order to help find firms, the EPA expects that before the end of the year they will hold international briefings in Japan, and North American and European countries, to directly communicate and attract international firms.

Waste Management

Incentives for Regional Cooperative Waste Management

The EPA is currently formulating draft guidelines for incentive subsidies that will go toward achieving waste reduction goals by encouraging local governments to cooperate together in managing waste. It is expected that the waste management cooperation model between Taipei and Keelung will be the first case to fit the qualifications of these new subsidy guidelines. The new guidelines allow for a maximum subsidization of NT\$30 million per year.

Given that new incinerators throughout counties and cities in Taiwan are currently at different stages of completion, it will still take quite some time to fulfill the "one incinerator in every county/city" policy. In order to help local governments with waste reduction efforts and raise the efficiency of waste management, the EPA has drawn up the draft *Guidelines for Incentive Subsidies for Mutual Cooperation Between County/City Governments in Managing General Waste* (縣市政府合作處理一般廢棄物獎勵補助要點). The EPA convened a meeting on August 14 with all local environmental protection bureaus (EPBs) to discuss the content of these draft guidelines.

The draft guidelines list many

Currently, the Kaohsiung ESTP working group has collected information on over 1,000 national and international firms, and there are about 50 international firms interested in attending a briefing, with over 18 already expressing willingness to set up. Main industries include U.S. and Singapore technology firms that produce cracking catalyst for refined oil and extract valuable metals from waste materials. As for domestic firms, 25 are interested in setting up, with most firms being local Kaohsiung petroleum industries and manufacturers.

possible models of mutual cooperation that can be initiated by local governments, including: 1) both sides provide incinerators, 2) both sides provide landfills, 3) one side provides incinerator and one side provides landfill for incinerator ash (as in the Taipei-Keelung cooperation model – see EPM Vol. VI, Issue 8), and 4) any other mutual cooperation method agreed to by both sides.

The draft guidelines indicate that the EPA will provide incentives to those local governments engaging in any one of the above mutual cooperation models. In the current draft, the two methods of providing incentives are a plaque of honor or subsidization. In light of the possibility that a mutually beneficial arrangement between two sides may not result in completely equal

terms of exchange, the EPA expressed that subsidy monies can be used in such cases to make up for the difference. The objective of this plan is to encourage more counties and cities to build successful models of mutual cooperation in waste management. A cap of NT\$30 million per year will be placed on each subsidy, and each cooperation model may receive the subsidy for a maximum of three years.

The EPA conveyed that in principle, these subsidies will be given as a means of encouragement. When applying for the subsidy, counties and cities must submit the agreement signed by both parties as well as a copy of the cooperation plan. The parties may then receive the subsidy after the case is reviewed and approved by the EPA. Subsidy monies must be applied toward the cooperative waste management plan, and the subsidy will be cancelled once one side discontinues its part of the cooperation plan. In the event that either side does not comply with the terms laid out in the approved contract, subsidy monies that have already been issued should be returned.

Although Kaohsiung County and Kaohsiung City have initiated a cooperation model for general waste disposal, this case does not qualify under the scope of the subsidy guidelines because the two sides have already adopted a payment system. The Taipei-Keelung cooperation model, however, does comply with the guidelines and is expected to be the first case to benefit from this new financial support measure as it is already prioritized to receive the NT\$30 million subsidy. Mutual cooperation is based on fair and equal benefits for both sides. Thus in the event that one side is obviously losing out on the cooperation deal, the subsidy can be applied to ensure that the benefits re-

ceived by both sides are balanced out to a certain degree.

The EPA will make a final deliblines and if all goes well they

will be implemented after review and approval by the Executive Yuan.

For more information, please call 02-2311-7722 ext. 2620

Water Quality

Action Taken on Soil and Groundwater Survey Results

Soil and groundwater surveys of sites at potential risk of having severe pollution are the continued focus of soil and groundwater remediation work. In particular, much effort is concentrated on surveying gas filling stations ten years old or more and large-scale storage tanks. Based on the EPA's latest survey results, soil or groundwater pollution has been discovered at as much as 5% of 400 filling stations in southern Taiwan. Local environmental protection bureaus have been instructed to immediately handle these pollution cases according to the regulations in the *Soil and Groundwater Pollution Remediation Act*.

Since the establishment of the Soil and Groundwater Remediation Fund Management Board (SGRFMB), the EPA has strengthened controls by continually carrying out soil and groundwater inspections of gas filling stations and large-scale petrochemical storage tanks susceptible of causing severe pollution. The SGRFMB oversees, instructs and follows up on gas station and petrochemical companies to ensure that they are adopting all the required measures. In addition, follow-up pollution inspections and remediation measures are

administered to prevent pollution from spreading and to safeguard a healthy living environment for citizens.

Inspections carried out in the year 2001 targeted potentially high risk pollution sites including 191 gas filling stations and 25 large-scale storage tanks. Continuing through with this effort, this year the EPA has expanded soil and groundwater inspections to include all gas stations ten years or over and large-scale storage tank enterprises. This year's inspection covered a total of 400 gas stations ten years or over



Groundwater pollution near gas filling stations is an issue of significant concern.

and 172 large-scale storage tank facilities in southern Taiwan from Jhanghua County southward. Nineteen gas stations and eight storage facilities were discovered to have caused soil or groundwater pollution exceeding control standards. In early August, the EPA informed each local environmental protection bureau (EPB) of the initial inspection results and types of pollution. Enterprises were thereupon instructed to adopt appropriate measures to improve the situation.

This year's investigation found that pollution at ten out of nineteen sites exceeded *Groundwater Pollution Control Standards*, while one site showed pollution levels to exceed *Soil Pollution Control Standards* and the remaining eight sites exceeded pollution control standards for both soil and groundwater. The most common types of soil pollution found were total petroleum hydrocarbons (TPH), while benzene was the most widespread groundwater pollutant. Pollutants found at the eight large-scale storage tanks posting groundwater pollution included benzene, vinyl chloride, trichloroethylene and phenols, varying depending on what kind of substances were stored. The EPA indicated that during the inspection some of the businesses were found to have already begun adopting improvement measures. In the end, pollution was confirmed at nearly 5% of the total number of sites inspected, and most were cases of groundwater pollution.

The EPA also carried out a survey of the status of groundwater use near inspected sites to gain an initial understanding of the situation, and found no cases in which residents were drinking the groundwater directly. However, as a necessary precaution, local EPBs have been instructed to get a complete grasp of the status of groundwater use near inspected sites and carry

out control measures if needed in order to ensure that it is safe for citizens to use the water.

Waste Management

RRRA

Implementation Rules Enacted

The EPA promulgated the *Resource Reuse and Recycling Act Implementation Rules* on August 27 to fully put into practice the goal of resource sustainability. These rules clearly defined the duty and extent of authority of central and local environmental protection agencies regarding reuse and recycling, as well as provided detailed rules regarding fines on a retroactive per-day basis. With this ordinance in the books, legislation regarding recycling and reuse in Taiwan has come one step closer to completion.

Resource recycling is a crucial part of environmental policies on source reduction of waste. Numerous strict measures have come out since the Resource Reuse and Recycling Act (RRRA) went into effect on July 3 this year (2003). On August 27, the EPA promulgated the *Resource Reuse and Recycling Act Implementation Rules* (資源回收再利用法施行細則) with a total of 19 articles, which stress the importance that the act places on source reduction and reuse and recycling. These rules act as a foundation for a society that values the sustainable use of resources by ensuring that the implementation of recycling policies has unequivocal legal backing.

The implementation rules first clearly define the reuse and recycling policy items under the authority of the EPA, which include: 1)

planning, decision-making, supervision and execution of national renewable resource reuse and recycling policies, programs and plans, as well as investigating, advocating, training, counseling, evaluating and researching related matters; 2) carrying out regular assessments of achievements; 3) collecting and compiling data for annual reports; 4) coordinating and executing renewable resource reuse projects involving in two or more local governments; and 5) planning and installation of special areas for development of national environmental protection technology or renewable resource recycling and reuse.

News Brief

Hau Visits Germany, Invites Companies to Set Up in Environmental Technology Parks

EPA Administrator Hau Lung-bin (郝龍斌) led a delegation in late August to Germany to meet with the German Federal Ministry of Economics and Technology and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety to better understand Germany's environmental policy, economic trends and concepts of sustainable development, as well as to introduce the development status of Taiwan's environmental science and technology parks to German authorities. Delegation members included EPA Department of Waste Management Director Chen Hsiung-wen (陳雄文), EPA Office of Science and Technology Director Roam Gwong (阮國棟), and representatives of the German Trade Office in Taipei and the Industrial Technology Research Institute. The delegation stopped in Berlin, Munich and Frankfurt to observe local environmental protection technology industry, and held a briefing in Munich to invite German businesses to set up shop in Taiwan's environmental science and technology parks.

The primary tasks of local environmental protection bureaus (EPBs) are stipulated in Article 6~6 of the implementation rules. Before March 31 each year, EPBs are required to submit to the EPA the previous year's renewable resource reuse achievements and the status of investigations into penalties. Moreover, EPBs must submit renewable resource reuse implementation plans for the following year to the EPA by October 31 each year.

Articles 11 through 18 of the implementation rules offer detailed explanations regarding fines, paying special attention to the method for calculating retroactive per-day fines. As in other legislation such as the *Air Pollution Control Act* and the *Water Pollution Control Act*, Article 10 of the implementation rules refers to Article 96 of the *Government Procurement Act*, which offers a clear-cut definition of environmental protection products. This once again plainly shows how recycling policies emphasize the principles of source

management and product life cycles.

The *Resource Reuse and Recycling Act Implementation Rules* builds on the spirit of the original act. When putting future policies into practice, as long as it is technologically and economically feasible, those materials announced as renewable resources should be reused or recycled; conversely, disposal of such renewable resources constitutes a violation. At the same time, the

rules request businesses to consider when designing source materials: 1) future uses of their product after reuse/recycling, and 2) what percentage of the product will use reused/recycled materials. The government shall also adopt methods to carry out inspections and provide guidance to prevent the overuse of natural resources and promote reuse and recycling, ultimately to establish a comprehensive and complete reuse and recycling system.

Air Quality

Foreign Pollution: Main Source of Acid Rain in Taiwan

Results of the EPA's acid rain monitoring reports for the months of January to July show that the likelihood for acid rain to fall in the vicinity of Yangmingshan and the Pengjia Islet is as high as 90%. Precipitation in this region shows comparatively higher levels of acidity in summer rains, suggesting that off-shore pollutants have the most serious impact on the pH levels of rainfall in Taiwan. Foreign pollution accounts for over half of the source of Taiwan's acid rain.

To better understand the status of acid rain pollution in the Taiwan area, the EPA began carrying out the Taiwan Area Acid Rain Monitoring Plan in 1990. This year (2003) marks the first time for this plan to include data from acid rain monitoring stations set up in Yangmingshan (陽明山) and the Pengjia Islet (彭佳嶼). At present there are a total of 12 monitoring stations established throughout Taiwan. In consideration of the impact of different geographical factors such as topography and climate on monitoring results, as well as the need to obtain more objective and comprehensive figures, the location of monitoring stations is frequently and regularly changed.

Based on results of monitoring data from January to July this year, the EPA indicated that observations over the years show that northern Taiwan is the area

most seriously impacted by acid rain. Acid rain is defined as precipitation that has a pH value of five or less. Northern Taiwan posted an average pH value of 4.5 with over an 80% likelihood of acid rain occurring in this region. In eastern Taiwan, the areas of Ilan and Taidong showed a 50% probability of incurring acid rain, and other regions showed a 40% chance or below.

The EPA indicates that despite the various air pollution control strategies carried out over the past 10 years, Taiwan's acid rain situation has still not improved. This is attributed to the long-distance transport of sulfates (SO_4^{2-}) from offshore regions. It is these sulfates that account for the primary source of acid rain as they drift over Taiwan. Looking at the ratio of impacts from the long-distance transport of pollution for each kind of weather pattern in Taiwan throughout the

Activity

Firing Up for "Clean Up the World" Event on 9/20

Clean Up the World, a global environmental organization will hold a worldwide event on September 20, aiming to recruit 50,000 volunteers in Taiwan to join with others around the world in cleaning up the environment. Every year, Clean Up the World inspires around 40 million participants from over 125 nations to take part in this event. This is the third year for Taiwan to participate in this world day of action. President Chen calls upon Taiwan to do its part as a member of the global village and enthusiastically join in this event by cleaning up our part of the Earth. Those wishing to register for the event can find more information on the event website: <http://www.cleanuptheworld.org.tw>

year, we see that northern and eastern Taiwan receive the greatest impact from the northeasterly winter monsoon winds. Central and southern Taiwan, however, receive the greatest impact from summer rains.

Statistics for the year 2000 show that close to 52% of the acid rain in Taiwan came from foreign sources, 85% of which is attributed to 7 major regions in Asia.

Long-distance transport of foreign pollution plays an important role in the processes surrounding the formation of acid rain in Taiwan. Looking at an average of all regions in Taiwan, approximately 31%~40% of all sulfate-laden acid rain in Taiwan is transported over long distances from offshore regions. Research findings show that the amount of acid rain containing sulfates derived from emission sources in the Taiwan region has been on a downward trend in recent years, already from 45.87 tons of acid rain in 1995 to 22.67 tons in 2002.

In contrast, the ratio of sulfate-laden acid rain transported from distant offshore regions is on an upward trend. For example, statistics for the year 2000 show that close to 52% of the acid rain in Taiwan came from foreign sources, 85% of which is attributed to seven major regions in Asia, including Japan, Korea, Northeastern China, Northwestern China, Central China, Southern China, the Indochina Peninsula, and the Philippines. Among these seven regions, 85% of the acid rain pollution comes from Mainland China.

As for promoting mutual exchange with the international community, the EPA expressed that Taiwan's 12 acid rain monitoring stations already link up with Japan's Acid Deposition Monitoring Network in East Asia (EANET) and the Composition of Asian Deposition (CAD) monitoring network in Southern Asia through strategic alliances to foster multilateral cooperation and share research data. Drawing on the US' experience in researching

acid rain, Taiwan has reached an initial consensus with the US National Atmospheric Deposition Program (NADP) to carry out multilateral cooperation and technology exchanges. These examples of teamwork help keep Taiwan's acid rain monitoring and analysis methods in step with the rest of the world, as well as help foster regional cooperation with other East Asian countries to jointly prevent and control acid rain.

General Policy

Complaints About Entertainment Venue Noise Pollution On Rise

Local environmental protection bureaus around the nation are receiving increasing numbers of noise pollution complaints. Last year a record high of 28,507 noise pollution complaints were reported. Densely populated metropolitan areas of Taipei City, Taipei County, and Kaohsiung City posted the highest number of cases, respectively. Among cases reported over the past three years, entertainment venues have displaced factories as the primary reason for complaints.

Waste had perennially been the top reason for citizen complaints while noise pollution followed behind at second. According to data collected last year by local environmental protection bureaus (EPBs) around the nation, the number of noise pollution complaints reached a new all-time high of 28,507. This figure was greater than the previous high set in 2000 with 27,405 cases, and showed a dramatic increase over 2001, which had 23,154 cases. In an initiative to understand how local EPA authorities are addressing this situation, the EPA convened a meeting on August 18 inviting representatives from all environmental protection agencies to discuss the matter.

Taking a look at the reasons for noise pollution complaints, the greatest increase has come from entertainment venues. During a brief four-year period from 1998 to 2002, the total number of complaints more than doubled from

5,203 to 11,755 cases.

Furthermore, during that period of time, factories, which once were the leading category of complaints, recorded a gradual decline from 7,685 cases in 1999 to 5,695 cases in 2002. Local EPBs state that this is mainly a result of the waning domestic economy with the manufacturing industry increasingly relocating operations abroad and the subsequent reduction of a substantial number of local factories. In addition, many of those who have found themselves unemployed have changed over to jobs as street vendors and work in night markets, which has led to an upsurge of fly-by-night karaoke establishments in cities and counties and more entertainment venues in densely populated urban areas. All are significant reasons contributing to the rising number of noise pollution complaints.

Along with the factors presented

above, the prevalence of urban areas containing an intermingling of residential and commercial space increases the potential for noise pollution complaints. The use of loudspeaker devices at kindergartens and daycare centers often subjects the public living in these neighborhoods to noise pollution problems. Worksites for large-scale construction projects, such as the subway system and high-speed railway, are additional factors. These are the predominating reasons for the persistently high number of complaints about loudspeaker devices and construction site noise pollution.

Since each local environment is different, Article 7 Item 1.6 of the *Noise Pollution Control Act* (噪音管制法) authorizes each EPB to stipulate that venues, factories, and devices may not exceed levels set forth in the Noise Pollution Control Standards. In 1999, the EPA announced that all local EPBs must enact the above regulation and included this as an item when assessing the performance of local EPBs. As of August, twelve local authorities had already promulgated this noise pollution control regulation.

Taiwan's cities are extremely congested and densely populated, a factor that magnifies the potential for noise pollution disturbance resulting from residential apartment buildings. The Taichung County EPB was the first to complete promulgation work. The contents of their February 11, 1997 legislation are as follows: water cooling towers, generators, air conditioning systems, and individuals raising more than five dogs at non-entertainment sites, such as apartment buildings, governmental agencies, and schools, must comply with the *Noise Pollution Control Standards*. Entertainment venues and commercial sites must also comply with the *Noise Pollution Control Standards*.

Noise pollution has already received public attention in urban areas and continues to be an issue of growing concern, and the EPA has taken steps to ensure that the responsible authorities have legal backing to administer noise pollution controls. Besides incorporating

General Policy

Three New Green Mark Standards Released

In early August, the EPA announced three new Green Mark regulatory standards, including multi-function office machines, mobile phones and oil-based paints, increasing the number of Green Mark products from 77 to 80. Although no applications have yet been received, it is anticipated that there will be a fair impact in related industries.

As the mobile phone penetration rate has exceeded 90% of the population of Taiwan, and considering the frequent use of mobile phones in many people's daily lives, there is an urgent need for mobile phone eco-label regulations. The EPA recently announced three new Green Mark standards for multi-function office machines, mobile phones and oil-based paint, with 'low-pollution' and 'energy-saving' as the primary objectives. Of these, the mobile phone regulatory standards have received the most attention.

The EPA has stated that mobile phone Green Mark standards were

the progress of each local EPB in enacting these noise pollution standards into performance assessments, the EPA has requested the remaining local EPBs (over 10) to expedite efforts in promulgating these regulations.

created in reference primarily to the standards announced last June by Germany's Blue Angel. These standards entail that applicable phones must meet GSM standards for battery-powered mobile phones. Moreover, focusing on an issue of great public concern, product Specific Absorption Rate (SAR), which directly affects human health, is stipulated to be less than 0.6 W/kg. However, according to the Directorate General of Telecommunications, only 10~20% of mobile phones on the market in Taiwan meet SAR standards.



Mobile phone SAR values are the environmental protection specification standards that citizens are concerned about the most.

Other Green Mark standards for mobile phones are: product cases and surface paint may not include nickel or chromium; product mercury levels must be less than 2 ppm and cadmium levels must be less than 5 ppm; product paint, wires and plastic components may not have lead levels exceeding 10 ppm; the product may not contain beryllium oxide; and the product's battery must comply with rechargeable battery Green Mark regulations.

With emphasis on saving electricity and energy, the new Green Mark regulations will be classified into three types of energy-saving standards based on different printing speeds, and distinct regulations for limits on power consumption during shutdown, standby and use. With regards to emissions regulations for laser printers, ozone emissions must not exceed 0.04mg/M3 and the limit for dust emission concentrations is 0.25mg/M3. Volatile organic compounds (VOCs) in inkjet printer ink may not exceed 5% by weight, and the levels of VOCs contained in the ink should be clearly stated in the manual.

Regarding the use of materials, regulatory requirements are similar to mobile phone regulatory standards. To achieve resource recycling and reuse goals, multi-function office machines should be designed to be disassemblable, that is, easily taken apart by the user with ordinary tools, such as screwdrivers. In addition, production and packaging materials may not include substances regulated by the *Montreal Protocol*, and products or packaging should be labeled Low-Pollution, Energy-Saving.

With regards to Green Mark standards for oil-based paint, products may not contain formaldehyde or halogenated solvents. The content of aromatic hydrocarbon compounds may not exceed 5%. The

product may not contain mercury, lead, cadmium, hexavalent chromium, arsenic, antimony, triphenyltin (TPT) or tributyltin (TBT). Levels of these heavy metals due to impurities and caused by pollutants during product manufacture may not exceed 0.1% of the total product weight.

For oil-based paints packaged in spray cans, the can may not con-

tain any substances regulated by the *Montreal Protocol*. If it is a metal container, the container may not contain lead; if it is a plastic container, the type of plastic should be labeled on the container. The product may not contain over 380 g/L of VOCs (with boiling points below 250°C). For more information, please call 0800-026945

General Policy

RDEC: EPA Leads the Pack in Bilingualism

The Research Development and Evaluation Commission (RDEC) recently paid a visit to the EPA to evaluate its program on establishing a bilingual workplace. The RDEC highly commended the EPA for its performance in this area and invited EPA to participate in the "2003 Bilingual Environment Expo" scheduled for December this year. The event will highlight their performance as the fastest moving model towards a bilingual workplace among all government offices.

Aiming to better understand each government agency's degree of success in implementing a bilingual program, the RDEC delegation visited the EPA's Environmental Analysis Laboratory and the Environmental Professional's Training Institute for an onsite assessment of the status of bilingualism as reflected in signage and labels at workplace facilities.

The RDEC's survey brought high appraisal to the EPA, primarily for its Chinese-English publications, websites and environmental regulations. Among the efforts, the continuous issuance of the *Environmental Policy Monthly*, which for years has provided foreigners with information on Taiwan's environmental policies and laws, was noted as an innovative step worthy of recognition. Apart from the main administrative body, other organizations within the EPA have also taken initiatives to publish respective organizational profiles, setting a role model for other government agencies.

News Brief

Revised EIA Act Implementation Rules

In line with revisions made to the Environmental Impact Assessment Act early this year, the EPA announced the revised *Environmental Impact Assessment Act Implementation Rules* (環境影響評估法施行細則) on August 13. The main changes made include revisions to Articles 25 to 28, changing parts that mentioned "hearing" (聽證會) to "public hearing" (公聽會), which is defined in a newly drawn up Article 24-1. A public hearing means that the competent authority should extensively collect opinions of the EPA, Environmental Impact Assessment Inspection Committee members, related groups, experts and scholars, organizations and local residents. These views will then be used for follow-up committee inspection meetings. (Please refer to EPM Vol. VI, Issue 2.)

The RDEC further pointed out that the EPA and its affiliated agencies are the first in the nation to complete bilingual signage within the workplace, and moreover are

ahead of schedule in the bilingual program. At present, the RDEC is organizing the "2003 Bilingual Environment Expo" to be held in De-

cember this year and strongly recommends the EPA to take part in the event to display their outstanding achievements.

News Briefs

"Water, Water Taiwan" (水水台灣) Event Promotes Sustainable Water Resources

The "Taiwan's Challenge: Rivers and Ocean" event was unveiled on August 22 during the 2003 Science Week. President Chen Shui-bian delivered the opening speech, remarking that efforts are still being made today to recover Taiwan's natural scenic beauty from the severe damage inflicted in the past by people with short-sighted motives looking for quick profit. Chen reaffirmed that the concept of sustainable development is the first and foremost principle to be implemented in government policy planning and construction in Taiwan henceforth. "Water Water Taiwan" was the theme of this year's Science Week activities, and a special exhibit will be showcased at six museums in five locations throughout Taiwan from now until October 19. The exhibit stresses concepts of sustainability and has special displays on the watersheds of the Tanshui River, the Dajia River and the Kaoping River. The website for the activity is <http://www.fhps.tp.edu.tw/WATER/index.htm>



Special display on the beauty of water in Taiwan shown at the Taipei Railway Station

Large-scale Incinerator Dioxin Test Frequency Increased to Twice Per Year

To reduce public misgivings about the dioxin pollution generated by incinerators, on August 20 the EPA announced the revised *Waste Incinerator Dioxin Control and Emissions Standards* (廢棄物焚化爐戴奧辛管制及排放標準), which increases the dioxin testing frequency for large-scale incinerators from once a year to once every half year. Testing procedures should invite local residents and

environmental protection groups to jointly supervise tests and the test results will be made public. The revised document stipulates that incinerators should undergo regular testing of dioxin levels in incinerator flues twice per year, once during the period from January to June, and a second time during the period from July to December. No more than nine months should pass between test dates. (Please refer to EPM Vol.VI Issue 4.)

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