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Feature Article

Progress Behind the Scenes: Strengthening the Management of Environmental Analysis

Environmental analysis has undergone extensive growth over the past ten years in Taiwan. By the end of 1998, 380 analysis methodologies have been announced and 77 laboratories within 70 organizations have been issued permits. The NIEA has issued permits for the environmental analysis of air, water bodies, drinking water, solid waste, toxic substances, and noise pollution. In order to support the activities of various environmental protection agencies, the NIEA has rapidly strengthened auditing activities and bolstered relevant legal bases. The *Regulations Governing the Management of Environmental Analysis Organizations* will be upgraded to a central government regulation, and a draft of the *Environmental Analysis Act* will be completed within six months.

Since 1990, the EPA's National Institute of Environmental Analysis (NIEA) has dedicated itself to implementing all activities related to three major missions: to assist public and private environmental analysis organizations build up capabilities, to enhance the quality of Taiwan's environmental analysis data, and to support the analysis needs of environmental protection agencies at all levels. Moreover, the NIEA has recently achieved significant hardware and software developments. These include completing the Environmental Analysis Building last year, establishing the capability to perform over 500 pollution analysis methods, and fully automating procedural systems. The realization of these goals has ensured the good health of Taiwan's environmental analysis system.

In support of recent regulatory requirements, the NIEA has identified several major areas of environmental analysis. These include regular inspection of motorcycles, analysis of drinking water, and analysis of air pollution from stationary pollution sources. Furthermore, in line with Taiwan's waste incineration policies, the NIEA has been actively developing dioxin sampling and analysis technology. In addition to government agencies and academic research bodies, a private firm has also achieved certification to perform sampling and will soon formally implement sampling of dioxin at emission outlets.

Statistics indicate that over the past several years, the majority of analysis organizations have applied for permits in the category of water quality analysis. This has been due to the implementation of reporting and monitoring activities under the Water Pollution Control Act. However, after July 1 last year the frequency of drinking water analysis suddenly underwent a great increase. This is a result of the *Drinking Water Act* stipulating that each public and private facility must analyze one-eighth of

its drinking water machines every three months.

After changes to the stationary source air pollution control fee were made on July 1, 1998, basing fee rates on actual emissions, 1,400 emission stacks at about 700 manufacturing sites have been inspected. These inspected sources account for approximately 18% of total reported non-continuously monitored air emissions in Taiwan.

Nationally, there are now 28 organizations that handle air pollution analysis services. Twenty-three organizations have permits to analyze the drinking water from a million drinking water machines across Taiwan. In addition, many more organizations are applying for permits. To meet market demands, and to support government policies for simplifying regulations, the NIEA has been aggressively upgrading the efficiency of certification review procedures. The application review process has been shortened from 140 days to 110 days.

In addition to enhancing administrative efficiency, the NIEA is doing its best to tighten quality management of analysis activities. Current certification procedures not only include paper-based review, they also utilize blind sampling, comparative testing, and technical examinations of laboratories applying for certification. Only after the applying lab's quality management system has been checked on-site and all requirements have passed inspection will certification be issued.

In fact, all environmental agencies have gradually realized that strengthening analysis activity management is both important and necessary. As for policies aimed at managing environmental analysis quality, the NIEA has from early on helped establish a domestic contracted analysis lab system. Before 1995, "assistance" was more important than "management." After 1995, as the contract analysis lab market achieved sufficient scale, the approaches of "assistance" and "management" were put on equal footing.

In support of air quality protection requirements, the NIEA has been auditing analysis organizations as they perform analysis. And, in the area of drinking water analysis, the NIEA has already begun to draft plans that will strengthen the auditing of analysis organizations identified as performing poor quality analyses.

According to the currently enacted *Regulations Governing the Management of Environmental Analysis Organizations* licenses have remain in effect for five years. If within this period, the analysis organization receives five warnings resulting in the revocation of its certification, it will be barred from apply for a permit in the same analysis area for three years. Moreover, if the competent authority discovers that the contract analysis organization has committed a serious infraction, the EPA can immediately revoke the organization's certificate. Through the steadfast resolution of the NIEA, over the past year a total of 15 organizations have been issued warnings for

shortcomings in their quality systems.

To further strengthen the legal bases for managing environmental analysis activities, the NIEA is now actively preparing significantly revised environmental analysis legislation. The primary goal is to elevate the *Regulations Governing the Management of Environmental Analysis Organizations* to the level of a regulatory act. These changes will likely occur within the next half-year. A draft of the *Environmental Analysis Act* will first be completed internally, and after inviting suggestions from concerned parties, further modifications will be made.

A look inside the EPA:

The National Institute of Environmental Analysis

According to the *Environmental Protection Administration Organization Statutes*, the R.O.C. EPA's National Institute of Environmental Analysis (NIEA) is primarily responsible for analyzing and monitoring air pollutants, water pollutants, soil pollutants, solid waste, toxic substances, environmental agents, microbial environmental agents, drinking water, etc. The NIEA also researches and sets analysis standards for the above mentioned items. The NIEA is further responsible for activities such as the analysis of noise, vibration, and non-ionizing radiation; setting biological analysis for and indicator definitions of environmental pollution; certifying environmental laboratory quality and capabilities; providing certification, management, and assistance to environmental analysis organizations; and other activities related to environmental analysis and monitoring.

In terms of organizational structure, the NIEA has a Director General, two Deputy Director Generals, and one Secretary General. Within the institute, five divisions handle analysis and monitoring activities and four offices handle secretarial, accounting, personnel, and internal affairs activities. The NIEA also has a technology task-force office that handles phased and/or temporary activities of importance. Due to activity requirements, there are three advisory committees: an environmental analysis and monitoring standard procedure review committee, an analysis/testing organization technical evaluation committee, and a laboratory safety, hygiene, and environmental protection management committee. The Institute's divisions are each headed by a Division Chief and perform the following activities:

Division 1 is the analysis planning and management division. It handles environmental analysis administrative planning and various types of environmental analysis. As part of these responsibilities, Division 1 reviews and announces environmental analysis methods, handles technical exchange, establishes and implements quality assurance and control systems. It provides permitting,

management and assistance to public and private environmental analysis organizations; and, it supervises and promotes analysis activities performed by local-level environmental agencies. Sample collection and management of chemical agents, as well as the implementation of information systems for environmental analysis.

Division 2 is the air and physical analysis division. It is responsible for air quality and sampling and analysis of air pollutants from stationary and mobile pollution sources. It also handles the analysis of noise, vibration and pollution from non-ionizing radiation. In addition, this division handles the establishment of air quality analysis and sampling techniques.

Division 3, the water quality analysis division, is responsible for the analysis of drinking water, marine water quality, river water quality, and surface and ground water. This division sets criteria for all forms of water analysis techniques.

Division 4 is the division that focuses on the analysis of toxic substances, environmental agents, general and industrial waste, and soil pollutants. This division also sets the technical criteria for analyzing substances related to these items.

Division 5, the biological testing division, handles analysis of biological toxins, and accumulated toxic chemicals. It establishes biological indicators and performs microbial analysis. This section also handles the drafting and revision of standard procedures for laboratory safety, hygiene, and environmental protection and biological inspection.

LY Passes Air Act Amendments

On December 29, 1998, amendments to Taiwan's *Air Pollution Control Act* passed 3rd Reading in the Legislative Yuan. Amendments to the Act include the implementation of a total pollution quantity control system and the establishment of articles regarding civil lawsuits. The amendments also include several changes to the air pollution fee collection and disbursement system.

Following the promulgation of the Air Pollution Control Act in 1975, two rounds of amendments were made in 1982 and 1992, respectively, and the third round of amendments to the Act were submitted to Legislative Yuan (LY) in August, 1997. This round finally passed the LY's 3rd reading on December 29, 1998, and was implemented through presidential order on January 20, 1999.

This round of amendments implemented large-scale revisions to the Act's structure. Most significantly, the amendments systematized the idea of total pollution quantity control (TPQC) systems by integrating it into Taiwan environmental legislation. Also, to implement a decision made by the Council of Grand Justices regarding the

collection of air pollution fees, the recent amendments added regulatory articles defining air pollution fee collection sources and scope of use. Moreover, clauses regarding civil lawsuits were added, giving the public the right to bring lawsuits against competent authorities that neglect their duty.

As these three amendments will have an extensive influence on the planning and implementation of all future environmental activities, the content of the amended act has become very complex, and discussions during the amendment review process were exceedingly complicated and difficult to integrate. From the initial draft submitted by the EPA to the final passage of the amendments, the contents of the draft had been modified a large number of times. The final version of the amended act has a total of five chapters and 74 articles. It is anticipated that the spirit integrated into the act through the new amendments will rapidly effect other environmental legislation.

The most significant amendment to the act -- the integration of a TPQC system -- will likely have an especially broad impact on the planning and implementation of all facets of pollution prevention and control activities.

According to the newly enacted amendments, the EPA can establish TPQC areas that are based on topographical and meteorological needs, rather than political boundaries. Within these areas, air pollution control will no longer be based on the emitted pollution concentration or pollutant amounts emitted by single pollution sources. The effects of total pollution emissions within a given TPQC area must be taken into consideration.

The new amendments stipulate that within TPQC areas that comply with air quality standards, newly built or altered pollution sources greater than a specified scale must first perform model simulations to prove that within the given area proposed changes will not cause air pollution levels to be exceeded. In TPQC areas not in compliance with air quality standards, existing stationary pollution sources should apply for approval of their air emissions with local-level competent authorities. Reductions in emissions must then be made in line with the objectives and timeframe set by the authorities. Moreover, newly constructed or altered stationary pollution sources above a specified scale must put in place best available control technology and obtain sufficient emission credits from other sources.

Using market mechanisms to increase incentives for implementing pollution reduction is another important facet of TPQC systems. The new amendments stipulate that if existing stationary pollution sources implement pollution control measures that result in actual reductions exceeding the amounts required, the reduced amount can be converted to emission credits which can then be reserved, used to offset other emissions, or traded.

Newly constructed or altered stationary pollution sources can only obtain emission credits in the following ways: through using reserved credits of existing pollution sources, through obtaining emission credits auctioned by relevant competent authorities, through reducing emission levels of mobile pollution sources, through reducing emissions created by street cleaning, or other methods as approved by relevant competent authorities.

In order to familiarize the public with TPQC mechanisms and thereby ease the transition to a total pollution control system, the new amendments strengthen existing control functions within air pollution control areas. Apart from lacking market exchange mechanisms, the various levels of control areas are similar to TPQC areas in terms of the procedures and tools for controlling pollution sources.

The second important change brought about by the new amendments to the *Air Pollution Control Act* is the adoption of a civil lawsuit system. Article 74 of the newly amended act states the following: if a public or private facility violates the *Air Pollution Control Act* or other regulations empowered by the *Air Pollution Control Act*, and the competent authority neglects its enforcement responsibilities, the injured party (defined as an individual or public interest group) can make a written request to the competent authority to enforce the regulations accordingly. If within sixty days, enforcement is still not forthcoming, the aforementioned party can sue the competent authority by directly initiating legal proceedings with the Administrative Court.

Environmental protection is not the only area affected by the new concept of civil suits. In October last year, significant changes were made to the *Law of Administrative Appeal*. These revisions loosened the requirements regarding the necessity of having an injured party (or those related to the injured party) file suit. Any citizen can act to protect the public good and raise a civil lawsuit against an administrative agency acting in an illegal manner. To prevent the proliferation of unfounded litigation, however, public interest lawsuits will be limited only to those laws specially indicated by legislative bodies. The newly amended *Air Act* has become the first such law to fully take advantage of the *Law of Administrative Appeal's* "public interest lawsuit" regulations.

In addition to the two revisions stated above, the newly amended act has made changes to Taiwan's air pollution fee system in the areas of fee collection, fee disbursements, and fee setting principles. In the future, mobile pollution source fees can be collected on either a vehicle- or fuel-basis. In the fuel-based collection scenario, fees will be collected from the source, i.e. fuel vendors rather than ordinary consumers.

The amendments have also added clauses to the act that alter the use of the air pollution fund. New stipulations require that 60% of the funds generated through air

pollution fees levied on stationary air pollution sources will be disbursed to local level governments, but the central government will be able to make reductions to this amount based on the effectiveness of local level implementation. At the same time, local governments will be allowed to alter fee rates according to air quality in their respective jurisdictions. The fee rate, as set by the central government, can be increased or decreased within a range of 30% at the local level.

Now that the *Air Act* amendments have been passed, the EPA will begin to draft a plan for demonstrating the TPQC approach, and a pilot TPQC area in Taiwan's central air quality region will be launched. Currently, the EPA is actively drafting the amended act's set of enforcement rules and expects to submit it to the Executive Yuan within one to two months. Reformulated plans for all levels of control regions will then be completed within six months.

Draft of Environmental Fundamental Act *Passed by EY*

On December 27, 1998, the R.O.C. Executive Yuan (EY) passed a draft of the *Environmental Fundamental Act*. To the original draft, the EY added promotional articles pertaining to green consumerism, cleaner production, total pollution quantity controls, and eco-labeling. The draft primarily embodies the spirit of integrating and rounding out currently implemented environmental regulatory systems.

In order to lay the foundation for executing Taiwan's environmental regulations, the EPA redrafted and submitted to the Executive Yuan (EY) the *Environmental Fundamental Act*. On December 27, 1998, the act finally received passage by the EY.

In 1989, two years after its founding, the EPA actually completed a draft of the Act which passed the EY and was sent on to the Legislative Yuan (LY). However, due to delays in the LY, the content of the draft Act became less relevant to existing practical needs and development trends. In response, the EPA recalled and redrafted the Act in 1996. The new draft was completed in February of last year and underwent several revisions by the EY before wording was finalized.

In comparison to the draft submitted by the EPA at the beginning of last year, the current draft maintains a structure of five chapters and 34 articles. Several clauses were added and removed, however. Two of the most significant changes include the following clearly spelled out statements: consumption in Taiwan should be based on the principles of green consumerism; and industry should, on the basis of life cycle considerations, diligently implement cleaner production systems and techniques.

Stipulations regarding total quantity controls and eco-labeling were also added to the draft. In terms of land development and use, all levels of government should implement plans that are based on the principle of total quality control of environmental resources. The new draft of the act also stipulates that government

agencies should give priority consideration to products that use recycled materials and/or have been awarded an eco-label. Furthermore, in support of the United Nations' Environment Day, the draft sets June 5 as Taiwan's Environment Day.

Even though the *Environmental Fundamental Act* is unlike the R.O.C. Constitution in that the act will not take precedent when other laws conflict with it, the act will still hold a superior position within Taiwan's system of environmental regulations. Once promulgated, the act will provide guiding principles for developing and amending future environmental legislation.

The current draft of the act emphasizes alignment with international sustainable development trends. As such, the act will integrate existing areas of regulatory computability and take further steps toward rounding out Taiwan's environmental regulatory system.

For example, the draft will be able to shore up areas where national environmental planning lacks a strong legal basis. Through publicizing the Environmental Fundamental Act, the EPA will be able to strengthen the implementation of localized environmental plans as implemented by local-level government agencies. In other words, the act will bring about the realization of basic environmental goals through integrating environmental planning between the central and local government levels.

Early passage of the act will not only assist the EPA in developing its work, it will also benefit the environmental activities of the entire nation. For example, despite the desire of the of Taiwan's Industrial Development Bureau to promote cleaner production, there have been many delays in passing the *Factory Management Act*. The difficulty lies largely in the lack of a legal basis for developing the legislation. The current draft of the Environmental Fundamental Act stipulates that industrial activities have cleaner production obligations. As such, the act provides a legal foothold for enforcing industrial process improvements.

Following approval of the draft, the EY forwarded this case to the LY for review. The EPA hopes that legislation relevant to the *Environmental Fundamental Act* will be completed as soon as possible.

Semiconductor Industry Air Emissions Standards Announced

On January 6, 1999, air pollution emission standards for the semiconductor industry were announced by the EPA. The standards, which are divided into those for emission quantities and reduction amounts, will go into effect July 1, 2000 for existing facilities.

Following a year of discussion and give-and-take with the semiconductor industry, the EPA finally announced the *Air Pollution Emission Standards for the Semiconductor Manufacturing Industry* on January 6, 1999.

According to the announcement, the standards define the target industry scope as comprising integrated circuit wafer manufacturers, wafer packaging firms, wafer-stacking, semiconductor masking firms, and circuit frame manufacturers. Targeted pollutants include volatile organic compounds (VOCs), trichloroethylene, nitric acid, hydrochloric acid, phosphoric acid, hydrofluoric acid, and sulfuric acid. The emission standards comprise standards for both emission reduction rates and total factory emissions (see accompanying table).

In November of last year, targeted firms had expressed to the EPA their concerns over the standards' requirements for installing VOC concentration detection equipment. They argued that these requirements created difficulty for them because this type of air pollution detection equipment was not yet available on the market.

Semiconductor firms also commented that the standards placed an excessive investment burden on smaller manufacturers thereby weakening their competitiveness. They expressed the hope that the EPA would give targeted firms a buffer period by extending the implementation date of air pollution controls. At the time, the EPA took industry's request into serious consideration.

As a result, the control targets of the emission standards were defined as larger scale manufacturers, and the implementation date was extended. The standards stipulate that existing facilities have three months from the date of announcement to file pollution control plans with local-level competent authorities. The EPA has also set July 1, 2000, as the date related emission standards and monitoring and reporting requirements will become effective.

Semiconductor Industry Air Pollution Control Standards

Air pollutants	Emission standards
VOCs	Emissions reductions greater than 90% or total factory emissions less than 0.6 kg/hr (according to methane calculation basis)
Tricholoroethylene	Emissions reductions greater than 90% or total factory emissions less than 0.02 kg/hr.
Nitric acid, hydrochloric acid, phosphoric acid, HF acid	Emissions reductions greater than 95% or total factory emissions less than 0.6 kg/hr.
Sulfuric acid	Emissions reductions greater than 95% or total factory emissions less than 0.1 kg/hr.

Note:
Because facilities that use wet scrubber technology to treat waste gas from nitric acid, hydrochloric acid, phosphoric acid, HF acid, and sulfuric acid cannot prove compliance with the above stated standards, they should meet other process requirements.

Industrial Park Wastewater Controls to Be Tightened

The EPA is drafting six major strategies to broadly strengthen controls on effluent emitted from factories in industrial parks. These strategies include confirming the capacity and capability of unified wastewater treatment plants, strengthening and

raising the industrial wastewater connection rates, implementing a discharge permit review system and periodic monitoring and reporting, actively promoting pre-discharge treatment controls, and conducting industrial park assistance and unified auditing.

Taiwan currently has 95 industrial parks with 50 more in the development or planning stages. The government has until now actively promoted wastewater management in industrial parks by treating wastewater in unified wastewater treatment plants. These plants are the responsibility of industrial park management centers.

As one often hears of wastewater incidents in Taiwan's industrial parks, the EPA recently proposed six major strategies to simultaneously strengthen controls on the hardware and software of current management systems. On December 9 of last year, the EPA discussed the strategies with representatives of local environmental authorities and related agencies and asked local authorities to support implementation timeframes.

Strategies 1 and 2 primarily address confirming the capacity and capability of unified wastewater treatment plants. Taiwan currently has 40 industrial parks with unified wastewater treatment plants. To accommodate industrial park growth and to meet 1998 emission standards, the MOEA's Industrial Development Bureau (IDB) in 1995 allotted NT$2.88 billion to upgrade and expand wastewater treatment plants. Expansion projects at eight parks are underway and are scheduled for completion in June of next year. Upgrading projects which began in July of 1987, include adding mixing and precipitation tanks, aeration and sedimentation tanks, concentration ponds, and sludge water extraction capabilities to another twelve plants. Projects at all but two of the industrial parks were completed at the end of last year. The remaining two projects at industrial parks in Tawulun and Hsining are scheduled for completion by the end of April.

Apart from requiring that current status reports on these projects be submitted, the EPA is also asking that industrial parks without a project plan submit a wastewater plant capacity estimate report confirming wastewater usage volume, wastewater generation volume, and treatment equipment capacity. The report must also address forecast growth of wastewater and estimate whether or not the wastewater treatment capacity of the industrial park will be sufficient over the next ten years.

In terms of surveying wastewater treatment plant capability, the EPA is asking that industrial parks submit information regarding wastewater discharge water quality, alternative plans to prevent water contamination during the project period, and sludge generation volume during normal operation, according to their wastewater discharge water quality. Compilation of the above information must be completed by the end of May.

Strategy 3 addresses strengthening wastewater connection and raising wastewater connection rates in industrial parks. The EPA in recent years has actively promoted wastewater connection in industrial parks. In 1993, the overall wastewater connection rate in industrial parks was only 49%. By the end of March last year, this rate had risen to 88% with approximately 380,000 tons of wastewater treated each day.

To increase the connection rate, the EPA began a six-month project in January to strengthen the auditing of companies that are not connected the treatment system. Companies not connected (those that have no discharge permit or are discharging at unapproved discharge points) will have one week in which to become connected. After that period, companies that still have not complied will be fined on a per inspection basis until they become connected or they obtain a discharge permit.

Strategy 4 addresses implementing permitting review systems and periodic monitoring and reporting. In the future, approval of discharge permits will be based not only on discharge from a factory's wastewater treatment plant, but will also consider the pre-discharge treatment of wastewater.

A major focus of revising the *Water Pollution Control Act* is to bring pre-discharge wastewater treatment under control. Prior to completion of the revised act, the EPA is relying on discharge permit approval and asking that industrial park management centers control pre-discharge treatment in good faith and to the best of their ability. When unified wastewater treatment plants in industrial parks apply for a permit, the EPA will also require that pre-discharge treatment information from relevant sites be attached to the application. This information will also be required when unified wastewater treatment plants apply for a modification or an extension.

To implement wastewater pre-discharge treatment controls, apart from the discharge permit requirement, Strategy 5 addresses promoting codes regarding the abnormal treatment of water entering industrial park wastewater treatment plants. These codes have been jointly drafted by sewer competent authorities and industrial park management centers.

The addition of this measure mainly addresses the current inflexibility of wastewater connection cutoffs. If a company exceeds the standards by even a small amount, its connection may be cut off. This kind of punitive measure gives companies little incentive to improve contamination prevention and actually leads to more companies discharging illegally. The codes mentioned above are expected to provide a more graduated and flexible framework for punitive measures. The EPA suggested that connection cutoff standards be changed from a single standard to inter-regional ones. After the wastewater discharge of a company exceeds a certain standard concentration, the company will be fined at different degrees of severity.

As drafting and enforcement of the *Special Treatment Codes* are not part of its

duties, the EPA is actively consulting with relevant provincial government agencies and industrial park management centers to accelerate drafting of these codes.

Strategy 6 addresses promoting assisting and unifying auditing in industrial parks. Prior to June of last year, the EPA had completed 560 diagnosis and assistance cases in industrial parks. In July of last year, screening continued on 130 companies with a poor pre-discharge treatment record to determine their prevention technology and to assist and track them. Companies were selected from dyeing, chemical, electroplating, leather, petrochemical and paper industries in major industrial parks.

To accommodate the simultaneous execution of assistance and auditing work, the EPA asked industrial park management centers to submit a unified auditing control plan prior to December 31 of last year that addresses companies that are not connected or that have a poor pre-discharge treatment record. This plan is to be executed after being agreed to by environmental authorities.

EPA Insists BOO Waste Incinerator Projects Adopt "Qualified Minimum Bid" Approach

Although a few local governments planned to adopt the "reasonable bid" contract negotiation approach for bidding on waste incinerator projects using the BOO scheme, the EPA insisted bid opening adopt the "lowest qualified bid" approach to prevent construction delays and to guard against fraud. On December 15 of last year, Changhwa County Government decided to award a project contract based on the latter approach. This move is expected to serve as a positive model for other counties and municipalities.

On December 15 of last year, Changhwa County Government held a bidding document review meeting for a waste incineration project in Changhwa County using the BOO scheme. It was decided in the meeting that contract award would adopt the "qualified minimum bid" approach currently being set by the EPA. To ease the financial burden of bid preparation, open bids will be split into two rounds. The first round will be for tendering qualification and technical specification bids, and the second round will be for tendering the price bid.

The Changhwa County government was apparently concerned that the EPA’s "qualified minimum bid" bid opening regulation would likely effect construction or operating quality as the lowest price proposal would win the contract. They hoped that the contract award method would be changed to the "reasonable bid" approach typically used to select technical consulting organizations.

However, if the "reasonable bid" approach set by the Changhwa County government is used, the authority and responsibility of local evaluation committees would have to be strengthened, and the progress of waste incinerator project

construction would be delayed. After conducting a cost-benefit analysis, the EPA decided to stay with the "qualified minimum bid" model.

To guard against fraud and excessive subjectivity of appraisal committee members, draft regulations regarding the appraisal of most favorable bids (under the *Government Procurement Act*), have set criteria for seven evaluation principles and five selection methods, each with a set of related guidelines. However, Changhwa County government's original plan has neither criteria for evaluation principles nor does it meet the "most favorable bid" appraisal criteria.

The "most favorable bid" appraisal criteria require that appraisal committee members appraise "technology, quality and function," "management and business clauses" and "price" based on technology, management and price, respectively. This requirement focuses on the expertise of appraisal committee members and prevents any single appraisal committee member from dictating the score of any single bidder. Under these conditions, about nine out of ten appraisal committee members in Changhwa County would have to be replaced.

Another issue is whether the "qualified minimum bid" approach would lead to price wars that affect the construction and operating quality of plants. To promote the construction and operation of waste incinerator plants by state-run and private enterprises, the EPA established a comprehensive regulatory scope for construction and operation. This scope covers equipment items, construction quality, capability testing, regulations regarding environmental emissions and contracts contain strict oversight provisions. These concerns are therefore unwarranted.

Apart from Changhwa County, local governments in Yunlin County and Hsinchu County have also expressed interest in adopting the "reasonable bid" approach to promoting waste incinerator projects using the BOO model. However, according to regulations concerning incentives for state-run and private waste incinerator construction and operation, local appraisal committee members evaluate bidding documents according to laws but have no responsibility to set the laws. Therefore, county and municipal governments are the leading authorities but they have no authority to change laws or regulations on their own.

After receiving a certain amount of pressure and many communications from the EPA, Changhwa County decided that the project in the North of the county would stay with the "qualified minimum bid" model for bid opening. This move is expected to serve as a positive model for other counties and municipalities. The EPA will continue to strengthen communications to persuade other county and municipal governments to adopt the "qualified minimum bid" approach.

EPA Considers Adopting Energy Star Plan in Taiwan

With environmental technology cooperation and interchange between Taiwan and the U.S. regarding the *Energy Star Plan* research project in its second year, the U.S. has expressed interest in promoting the *Energy Star Plan* in Taiwan through the aegis of the EPA. The EPA is currently conducting an assessment of how the *Energy Star Plan* would be differentiated from Taiwan's eco-label system and how it would support the "Green Structures Plan."

Environmental technology cooperation and interchange between Taiwan and the United States regarding the *Energy Star Plan* research project has entered its second year. During a meeting on the *Energy Star Plan* on 8 December 1998, the U.S. expressed interest in transferring the *Energy Star Plan* to the R.O.C. EPA. The focus of discussion this year includes certifying local claims for using the Energy Star, assessing Markal-Macro models and related social requirements and deciding whether or not the transfer plan is suitable.

The *Energy Star Plan* is a labeling system jointly promoted by the U.S. EPA and Department of Energy (DOE) that distinguishes products featuring high energy conservation and high energy efficiency. The *Energy Star Plan* utilizes a public- and private-sector joint cooperation approach and offers technical support to persuade businesses and consumers to invest in and adopt energy saving technology. The resulting reduction in electricity consumption reduces electricity power plant carbon dioxide emissions, helping to lower greenhouse gas emissions.

Apart from in the United States, Japan has also signed an agreement with the US EPA to obtain the rights to use *Energy Star Plan* labeling for office equipment. Two years ago, Taiwan and the US EPA jointly held the *Greenhouse Gas Reduction-Green Illumination/Energy Star Plan Symposium*. This was the first time the *Energy Star Plan* had been introduced to Taiwan companies.

In discussions held by the Executive Yuan's National Council for Sustainable Development, the EPA suggested that the *Green Illumination/Energy Star Plan* promoted in the United States be imitated through improvement measures such as high efficiency illumination, air conditioning and emissions venting systems. These would help achieve volume reductions for residences, businesses and government agencies and serve as solid responses to the *UN Framework Convention on Climate Change (UNFCCC)*. Recommendations regarding the *Energy Star Plan* made during the above mentioned discussion sessions were received favorably.

The United States' EPA expressed interest in introducing the *Energy Star Plan* in Taiwan with the EPA responsible for implementation. In response, the EPA noted that there would be a number of issues to resolve if it accepted the job. These would include deciding how the selling points of the *Energy Star Plan* would be

differentiated from those of Taiwan's Green Mark eco-label that include attributes such as "low polluting, energy conserving and recyclable." As the *Green Structure Plan* currently being promoted by the Ministry of the Interior's Architectural Research Institute contains many areas of potential overlap with the *Energy Star Plan* in terms of content and application range, there is a question of how these two plans will interrelate. The EPA and U.S. representatives are to conduct an assessment of various conditions and elements in Taiwan including its systems and society to determine whether or not the *Energy Star Plan* is be adopted.

Full Text Bilingual Search Engine Added to EPA's Website

To provide the public with faster information services and to address the problems faced by users of Internet search engines, the EPA developed an "Environmental Information Full Text English Language Search System" addressing environmental topics. The search engine was formally opened to the public on December 30 of last year.

With networks growing at a phenomenal pace, navigating through this sea of information is getting extremely difficult. To solve this problem, the EPA has developed an "Environmental Information Full Text Chinese and English Language Search System" addressing environmental topics. Offering network users a faster way to look for environmental information, the search engine was officially opened to the public on December 30 of last year at (錯誤! 尚未定義書籤。).

A plethora of search engines both local and foreign are currently in use by Taiwan's "netizens." Yahoo! and Lycos are among the more well known foreign search engines while GAIS, Yam and Chi Mou Search and Pa Chua Yu are some of the home-grown favorites. Some offer website searches, like Yahoo! and Yam, while others provide only full text searches of webpage content. Until now, local Chinese-language sites have not been included in non-Chinese search engines and vice-versa. The EPA's innovative new search system combines all of these functions including "topical webpage full text searches" bringing together environmental information scattered around the globe. The system provides users in Taiwan and overseas with a more comprehensive full text search service for finding environmental information on Chinese and English language webpages.

This global information network provided by the EPA is free to the public and accessible around the clock. There currently are more than 50,000 files of information on the website and with such an abundance of information, one could say it's the most comprehensive Chinese and English language environmental information network in Taiwan. The website is also the main mechanism in Taiwan for supplying environmental information.

To strengthen the service, the EPA also installed a full text search page. Apart

from providing the EPA's website with full text search capability, this page also uses cross-platform search technology to create an environment related website that has an environmental topic search system. This system provides a variety of search functions that support the Chinese and English language, Boolean operators (such as 'and', 'or' and 'not'), Chinese and English language "non-exact" entries, and Chinese language homonyms. Upon entering the website, users can search for website information of the Ministry of Economic Affairs (MOEA), Council of Labor Affairs, Council for Economic Planning and Development, Council of Agriculture, MOEA's International Trade Bureau, and environmental ministries of the United States, Canada, Japan, United Kingdom, Australia, Singapore and European Union. The full text searchable database of environment related information from Taiwan and abroad made possible by a search engine allows users to search quickly and efficiently for the information they need. Where linking to overseas websites typically involved long delays, this search system serves as a fast and convenient single window resource for environmental information from Taiwan or abroad.

The EPA noted that access to full text search is available only to environmental bodies in Taiwan and abroad. In the future, search scope will be expanded to include sites of environmental related organizations, groups, academic departments and companies. This should stimulate the creation of full text webpage searches on a variety of topics and languages in Taiwan and overseas, providing better information services by leveraging the power of the Internet.

News Briefs

Standards for Auto Industry VOC Emissions Come into Effect

On December of last year, the EPA wound up final discussions with companies in Taiwan's auto industry confirming that current auto primer coating capability in Taiwan is sufficient to meet the 110g/m^2 VOCs emission standard. As a result, these *Second Stage Emission Standards* have already gone into effect. The new standards also stipulate that the final figures should be a summation of the relevant individual components in cases where weight is used to compute the undercoat surface area.

Round Three of Companies to Report Industrial Waste Online Announced

On December 16 of last year, the EPA held discussions with the Industrial Development Bureau and relevant trade association representatives for the purpose of strengthening controls on industrial waste. It was decided during the meeting that the third round of companies to report online the direction of industrial waste disposal would be formally announced in January, 1999. This affect will cover those companies in the electronics, metals, and chemical industries that have more than

NT$50 million in capital, as well as the waste disposal companies entrusted by these companies to carry out such disposal work.

EPA Disagrees with "Gradual Decay" of Former RCA Contamination

Having completed remediation of contaminated soil at the former RCA site in Taoyuan, the current owner on December 16 of last year in a feasibility assessment of remediation work expressed hope that the site would gradually recover via natural decay and dissipation of organic pollutant contamination as current technology was not feasible. In response, the RCA Remediation Taskforce noted that decay rates for some ranges of the groundwater were neither clear nor stable and ordered the current owner to provide more information pertaining to questions raised by members of the review committee.