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The EPA recently completed a thorough review and modification of the *Air Act Enforcement Rules.* SO_x and NO_x will be the first pollutants targeted in future total pollutant quantity control areas.

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News Briefs

Feature Article

Enhancing the Performance of Taiwan's EP Personnel Training

Through the implementation of general professional and professional licensing training programs, the EPA's National Institute of Environmental Training aims to raise the quality of environmental protection personnel in the government and manufacturing sectors. Since 1992, the Institute has provided 26,000 person-sessions of professional training and approved more than 55,000 professional licenses.

Effective implementation of government policy relies on the quality of a nation's human resources. Because Taiwan lacks abundant land and other natural resources, the quality of human resources is all the more important for national development. Whether in government agencies or in private firms, the achievement of pollution control and sustainable development goals, as well as the raising environmental quality, relies upon achieving a high standard of professional skill on the part of environmental protection personnel.

Moreover, due to greater demands for more well integrated, multifaceted, professional, and localized environmental activities, EP personnel must continually be trained and introduced to knew concepts and techniques. Only in this way can EP personnel work performance be enhanced. Strengthening environmental training should be an investment made by all facets of society, from government to private firms to community groups.

Since July 1991, the EPA's National Institute of Environmental Training (NIET) has offered all manner of professional environmental training to both central and local-level environmental protection agencies, target industry competent authorities, as well as to state-owned and private firms. The activities of the NIET can be divided into two major types: environmental personnel professional training and training for pollution prevention professional licensing.

With a focus on practicality, general professional training is aimed at EP administrative personnel and those individuals in target industry competent authorities and industrial firms that have a practical responsibility to handle environmental affairs. Such training ensures that environmental policies and regulations are followed and enhances professional application. Because this type of training is directed mostly at personnel that implement and enforce environmental regulations, it is currently handled by the Institute itself.

Professional licensing training, on the other hand, is directed at specialized pollution control personnel in public and private facilities. To expand the capacity of specialized EP personnel training, the NIET has implemented flexible time and location scheduling for training courses and has allowed technical research institutes and EP organizations to hold training classes. On a continual basis, the Institute develops and revises all types of professional licensing training material, thereby keeping the content of training in step with practical needs.

The Institute currently offers licensing training for 12 types of professional activity. Courses include training for the following:

1. Specialized personnel handling industrial or municipal wastewater treatment systems
2. Specialized personnel handling air pollution control at public or private facilities
3. Specialized technical personnel to handle toxic chemical substance management
4. Technical personnel within public or private solid waste clearance and treatment organizations
5. Specialized personnel for disease vector control
6. Visual air emission inspectors
7. Stationary source air emission instrumentation inspectors
8. Motorcycle and automobile emission inspectors
9. Diesel emissions monitoring instrumentation inspectors
10. Vehicle emissions control system inspectors
11. Automobile inspectors
12. Motor vehicle noise level inspectors

The NIET estimates that it annually provides 2,500 person-sessions of general professional training and 6,600 person-sessions of professional licensing training. Statistics indicate that from July 1, 1992, to December 31, 1998, the NIET has offered a total of 26,155 person-sessions of general profession training and has approved 55,568 professional licenses.

To encourage EP specialized personnel to do their level best, the NIET selects for recognition personnel that have made outstanding contributions to environmental protection.

	General Professional Training		Professional Licensing Training	
	Classes	Person-sessions	No. of Types	Person-sessions
FY 1992	72	2,622	7	6,075
FY 1993	71	3,185	7	8,573
FY 1994	54	2,957	10	8,108
FY 1995	62	3,785	7	8,282
FY 1996	58	3,099	12	8,825
FY 1997	89	4,368	12	12,195
FY 1998	80	3,269	12	14,573

7/1/1998 to 12/31/1998	51	2,870	12	7,588
TOTAL	537	26,155	12	74,219

A look inside the EPA:

The National Institute of Environmental Training

According to the *Environmental Protection Administration Organization Statutes*, the responsibilities of the EPA's National Institute of Environmental Training (NIET) include the drafting and implementation of training programs for personnel involved in the areas of environmental education, environmental impact assessment, pollution prevention, environmental inspection and monitoring, and environmental dispute settlement. In addition to these and other training related activities identified by the EPA, the NIET also handles the drafting and implementation of environmental training programs entrusted to it by other relevant government agencies and groups.

The Institute's leadership is composed of a Director General, a Deputy Director General, and two higher-level staff members. Units within the Institute include an education section, an assistance section, an R&D section, and general affairs section. Each section is headed by a Section Chief.

The education section handles activities related to environmental education. These include such activities as the drafting and implementation of training programs, the arrangement and coordination of training classes, the editing, revising and publishing of educational materials, management of related students, the oversight and evaluation of training effectiveness, and assessing and improving educational activities. Other responsibilities include managing and publishing written materials and databases, planning for and managing educational equipment, and planning and holding educational seminars.

The assistance section is responsible for drafting and implementing programs that enhance students' personal and professional development, and for extra-curricular programs. This section also provides guidance in the area of student aptitude testing, and collects and organizes data on student guidance evaluations, and maintains and manages records pertaining to student organizations. The planning of educational enhancement and exchange activities, the management and assistance related to student housing, the editing of assistance and guidance materials, and the selection of counselors are also responsibilities of this section.

The NIET's R&D sections handles activities such as the drafting and preparation of training programs over the intermediate to long-term, the drafting and report preparation for fiscal year administrative programs, researching the improvement of training programs, and analyzing and assessing training effectiveness. Other areas of

responsibility include the collection, editing, and translation of training information; the planning and coordination of exchange activities between related training organizations; the control and evaluation of administrative duties; the planning and organizing of meetings and seminars; the management, analysis, and monitoring of public opinion; the handling of visitations, examinations, and participation on the part of foreign visitors; the evaluation and approval of the qualifications of environmental technical personnel. This section is also responsible for work scope items not handled by the Institute's other sections.

Finally, the general affairs section oversees the NIET's administrative responsibilities and activities.

EPA Drafts Rules for Green Product Procurement

The EPA has drafted the *Regulations Governing the Criteria and Implementation of Priority Purchasing by Organizations of Green Products*. These draft regulations require the formation of a technical committee for green product certification and stipulate documentation of green product certification approval. Guidelines concerning the committee's structure and procedures for review and certification issuance will be drafted by the R.O.C.'s Public Construction Commission. The draft provides further detailed stipulations for green product preferred pricing and bid selection procedures for green and non-green products. Following review by the Public Construction Commission, the draft will be announced and implemented.

The *Government Procurement Act*'s articles on green purchasing will become effective on May 27 of this year. According to Article 96 of the Act, products that comply with the government's conditions for priority purchasing include the following: products that have been awarded an eco-label; products that in the manufacturing and use phases comply with the principles of resource reuse, recyclability, low pollution, and energy conservation; and, products that enhance the welfare of society or decrease costs to society. To smoothly roll out the green purchasing system, the EPA has over a long period been developing a regulatory framework and soliciting input from relevant parties. These efforts have finally culminated in the draft *Regulations Governing the Criteria and Implementation of Priority Purchasing by Organizations of Green Products*.

During the draft development process, representatives from the Public Construction Commission and several academics pointed out that the green purchasing clauses are actually non-binding. To overcome implementation barriers and thereby achieve the goal of encouraging widespread green manufacturing, the government

should clarify green product certification methods and concretely define the processes by which green product priority bids are selected and how the "acceptable price differential" system would work.

In response to these suggestions, the EPA has added to the draft the following: green product certification mechanisms; priority purchasing and price differential preferencing clauses; and, methods for selecting non-green and green product bids.

The draft requires that green product certification, and the issuance of certification documentation, be handled by Green Product Certification Technical Committee. The Technical Committee will be made up of representative from relevant agencies, academics, experts, and impartial social figures. The proportion of academics and experts may not fall below one-third of total committee members. The structure of the committee and licensing review procedures will be set separately by the Public Construction Commission.

Key to green product procurement is the "acceptable price differential" concept. Under normal government procurement procedures, bids are awarded to the goods and/or services with the lowest bid price. To encourage firms to offer green products, the aforementioned regulations allow government bodies to choose green products that may have a higher bid price. The difference in bid price, however, must be within specified limits -- the "acceptable price differential." For example, if a green product with an acceptable price differential of 10% is less than 10% more expensive than the lowest bid, it can still be selected.

The criteria for determining which products can use the price differential and the methods for determining the differential are explained below:

1. Products that have been awarded an eco-label or products that comply with requirements for recycled material content, recyclability, or low pollution can utilize an acceptable price differential of not more than 10%.
2. Energy-saving products can utilize a price differential equal to the amount of money saved through using the product divided by the original price of the product. This differential may not exceed 10% of the original price.
3. Products that increase social benefit or reduce social costs can utilize a differential equal to the amount of money saved to society through using the product divided by the original cost of the product. This differential may not exceed 10% of the original price.

The draft regulations also set guidelines for bid renegotiation by green product firms. If a green product firm does not have the lowest bid, the procuring agency can offer this firm the opportunity to rebid its price. If the firm's new bid matches or falls below the lowest original bid, then the firm will win the bid. If more than one green product firms are involved in the bidding, bid renegoiation rights will go to the green product firm

with the lowest original bid price.

If it is discovered that a winning product is not "green" or does not comply with other contractual obligations, the government agency has the right to suspend the contract and demand return of relevant fees, including the price differential.

Following the EPA's completion of the draft regulations, they will be submitted to the Public Construction Commission for review. The Commission will seek final opinions on the regulations and should publicly announce them in the near future.

Draft of Marine Pollution Control Act Readied

As drafting of the *Marine Pollution Control Act* nears completion, guidelines have been established to expand the legal basis for control of marine pollution, integrate administrative resources, and follow international trends. The content of the Act sets criteria for pollution originating from land, pollution from construction projects in marine areas, open ocean waste disposal, and pollution from marine vessels. The EPA expects the draft to be submitted to the Executive Yuan for review in late March.

Since its founding in 1987, the EPA has been planing the establishment of a regulatory act to control marine pollution. Recent develops have spurred this effort forward. In June 1998, the National Police Administration's Bureau of Marine Police was formally established and will provide assistance in enforcing marine-based environmental protection and conservation efforts. Moreover, the *R.O.C. Law of Territorial and Neighboring Waters* and the *R.O.C. Law of Exclusive Economic Marine Areas and Mainland Reefs*, both promulgated in January, 1998, clarified Taiwan's jurisdictional rights over marine areas. In light of these recent developments, the EPA pushed through to completion a draft of the *Marine Pollution Control Act*.

As it is currently drafted, the Act has contains nine chapters and 62 articles and focuses on several key sources of ocean pollution. These include pollution originating from land, pollution originating from marine area construction projects, open ocean waste treatment pollution, and marine vessel emissions.

The EPA's Bureau of Water Protection, responsible for the drafting of the Act, recently indicated that the key points for establishing the Act include the expansion of regulatory bases for controlling marine pollution and supporting the establishment of related regulations. Other key points include the expansion of applied scope, the adjustment of related administrative budgets and human resources. The Act also stipulates responsibilities of the implementing agencies, and it brings Taiwan into compliance with global ocean pollution sustainable development trends.

As for jurisdictional scope, the Act will hold sway in the areas regulated by the aforementioned marine laws. These areas include coastal zones, internal waterways,

territorial waters, exclusive marine economic zones, and water surrounding continental reefs.

In the Act, criteria for environmental protection in marine areas will be defined according to a given area's characteristics and uses. The Act classifies marine areas and sets environmental standards. It furthermore establishes guidelines for marine environmental monitoring stations and the regular reporting of monitoring results.

Because its area of authority is so broad, the Act incorporates the spirit of Japan's marine pollution control laws and sets the guidelines for a national marine pollution control committee that will review major policies and items related to ocean pollution emergency response planning and marine pollution control.

As for comprehensive pollution control, the draft requires that operations such as marine construction, ocean dumping, open ocean incineration, and other activities identified by the EPA as polluting to the sea shall install marine pollution control specialized units or technical personnel. These operations will also be required to submit documentary proof that they have the manpower, facilities, and capabilities to handle potential pollution emissions. They must also provide proof of emergency response plans and demonstrate financial wherewithal to handle emergencies.

The draft further sets guidelines for collecting open-ocean dumping fees. It requires competent authorities at various levels to levy fees against operations use ocean dumping as final waste disposal. The fee collection will be based on the nature and degree of impact on marine ecology.

In order to control pollution that originates on land, the draft prohibits firms from discharging effluent in sensitive areas without permission from the EPA. Such areas include river delta bird conservation areas, coral reef areas, ecological conservation areas, special scenic zones, and recreational areas. The draft also protects fishing resource conservation areas, major fish production areas, and other activities not permitted by the EPA.

Marine construction projects will also be regulated by the Act. The EPA retains the legal right to revoke licenses and/or permits.Articles in the Act stipulate that if ocean monitoring indicates that a construction project has adversely impacted the environment in a way that potentially harms the ecology or human health, then the EPA can order the project in question to partially or completely stop work or cease operations altogether.

The Act will also regulate ocean-based treatment or dumping of solid waste. According to the draft, the EPA will announce three types of controls on wastes dumped at sea. Type 1 substances will be completely banned from ocean dumping. Type 2 substances will be required to receive approval from the central Competent Authority, and Type 3 substances will be allowed to be dumped only within permitted

time limits and at permitted total amounts.

Control of pollution emissions from ocean-going vessels is another area of control. The draft sets down a multi-layered procedure for control. It requires thatagencies in charge of marine navigation set standards for marine vessel pollution prevention equipment. These authorities must also issue "marine pollution control certificates." In light of international treaties, the draft requires vessels that call in Taiwan ports to retain certain substances on board or discharge then to proper shore-based treatment facilities. These include waste oils, oil containing mixtures, other wastes and hazardous materials. For providing treatment services and facilities, port authorities will have the right to collect necessary treatment fees.

Another aspect worth noting is that the *Marine Pollution Control Act,* coming on the heels of the *Toxic Chemical Substances Control Act,* introduces liability insurance requirements. It is hoped that market-based mechanisms can strengthen capabilities to monitor overall pollution control efforts. The draft Act stipulates that to cover compensation claims, vessel owners must carry adequate liability insurance or offer adequate financial guarantees. This is especially the case for vessels that displace over 400 tons and contain oil and/or chemical products as cargo. These vessels will be required to carry insurance or offer financial guarantees according to their total tonnage.

Because other government agencies have not expressed much concern over the current version of the draft, the EPA expects to complete final revisions and submit the draft to the Executive Yuan for review in the near future.

Control of Air Analysis Organizations to be Strengthened

Due to the close relationship between pollution monitoring systems and the recently revised systems of quantity-based air pollution fee collection and total quantity control systems, the EPA has decided to strengthen the regulatory management of contracted pollution monitoring organizations. The newly amended *Air Pollution Control Act* authorizes the EPA to revoke the license of a monitoring organization that commits a single serious violation of relevant laws. To raise the status of regulations governing environmental monitoring, the EPA is working to complete a draft of the *Environmental Analysis Act* by June of this year.

Recent revisions to Taiwan's systems for air pollution fee collection and the addition of total pollutant quantity controls have made the role of environmental monitoring system key to the success of these regulatory changes. Statistics generated since the adoption of a quantity-based air pollution fee collection system indicate that roughly 72% of emitted air pollution is monitored through continuous monitoring systems (CMS). Another 18% of emissions is monitored through contracted monitoring firms.

Because this 18% is emitted by many small factories, the number of sites using this method is great. There are currently about 20 firms responsible for the monitoring of air pollution sources throughout Taiwan.

The data provided by monitoring firms directly provides the basis for determining fee collection rates. Fee collection uses differential rates based on emission concentrations vis-a-vis given standards. For example, fees for nitrogen oxides (NO_X) emissions in Level 1 and 3 control zones are NT$10 per kilogram. If a given pollution source emits NO_X concentrations that are less than 75% of the standard, the fee would be lowered to NT$5/kg, and if less than 50% of the standard the fee would be NT$3/kg. This example illustrates that the proper or improper monitoring of emissions can greatly impact the income to national coffers and affect the fairness of pollution control activities.

Furthermore, good management of organizations' analysis quality has an even broader influence on air pollution control efforts. As total pollutant control quantity areas are established, one of the most significant activities will be to forecast total air pollution in a given area. The accuracy of these forecasts will be based on the accuracy of analyzing air pollution from individual sources. Only with high quality monitoring data can Taiwan achieve the successful implementation of total pollutant quantity control mechanisms such as simulation modeling, best available control technology, and tradable emissions credits.

Because the importance in raising monitoring data quality, the EPA will further strengthen the management of monitoring activities. Also, according to the newly amended *Air Pollution Control Act*, the EPA has the authority to immediately revoke the licenses of monitoring firms that seriously violate relevant regulations.

In fact, the EPA's National Institute for Environmental Analysis (NIEA) recently announced that one contract monitoring firm was ordered to suspend operations for three months when it was discovered that it had not fulfilled its required duties. This was the first time the EPA had ordered a contract analysis firm to suspend operations on a comprehensive basis (rather than just suspend analysis activities for a single pollutant type). From now on, as part of the effort to strengthen management of the contract monitoring industry, firms that are discovered to have committed serious legal violations, will be punished according to the law.

Apart from the *Air Act*, other environmental regulations that were enacted early on do not clearly stipulate license revocation. Current guidelines authorize the revocation of an analysis organization's license when a serious legal violation has been committed. However, the Council of Grand Justices recently ruled that the legal basis for such punitive action is not complete.

In response, the EPA is actively drafting legislation that will raise the position of

regulations governing environmental monitoring activities. The NIEA is currently drafting relevant articles. The biggest consideration in drafting this legislation is whether to limit the regulatory scope to the management of analysis organizations, or to expand it to cover all analysis related activities. The EPA anticipates the draft to be completed around June of this year.

EPA and IDB Cooperate to Increase Industrial Waste Treatment Capacity

The EPA and the Industrial Development Bureau (IDB) have reached a consensus on industrial waste treatment in Taiwan. In the future, newly constructed and large-scale industrial parks must install incinerators; and, general refuse incinerators will be used to treat general industrial waste. The IDB will provide 98 hectares of industrial park land for the purpose of constructing waste treatment and/or resource recycling facilities. Moreover, the EPA has insisted that, after 18 months, industrial waste generated within a given industrial park must be treated within that park.

The biggest problem in treating Taiwan's industrial waste is the lack of treatment capacity. Currently, legal waste clearance and treatment companies only have the capacity to treat 18% of Taiwan's total annual industrial waste output. To encourage industry to construct treatment facilities, by removing investment barriers, the EPA and the Ministry of Economic Affairs' Industrial Development Bureau (IDB) have decided on several basic paths forward.

First, in the future new large-scale industrial parks must install incinerator facilities that have the capacity to treat industrial waste generated by manufacturers within the given industrial park. After 18 months, all industrial waste generated within a given park must be treated within that park, unless more adequate treatment can be provided at a location outside the park.

The IDB will reserve land for the installation of final treatment facilities in coastal industrial parks, industrial parks on outlying islands, and when other industrial parks undergo expansion. This land will most likely be used for treatment facilities. While industrial park incinerators are being completed, regional general refuse incinerators will in the meantime treat general (non-hazardous) industrial waste.

Furthermore, because land held by local governments for the purpose of waste treatment is currently not sufficient, the IDB will provide 98 hectares of land on which waste treatment or resource recycling facilities may be constructed. Current plans target land in industrial parks such as Chang-bin (29 hectares), Li-yi (10 hectares), Ta-fa (5 hectares), and Kaohsiung Lin-hai (15 hectares). It is estimated that these facilities will increase treatment capacity by 1,200 tons per day. The IDB also plans to

construct northern and southern regional incinerators in the Hsin-chu and Lin-yuan Industrial Parks, respectively. These facilities should add another 300 tons per day of waste treatment capacity.

The IDB has begun accepting applications for industrial park land to be rezoned into industrial waste treatment land. Currently, firms in the Chung-li, Long-teh, and Kaohsiung Lin-hai industrial parks have passed land rezoning reviews. After completion, facilities in these areas will be able to treat an estimated 1244 tons per day of industrial waste.

In addition to treatment facilities, the EPA is also actively studying the feasibility of implementing temporary waste storage centers. The reason for this policy development is to encourage firms to invest as early as possible in the waste treatment industry, and thereby solve Taiwan's waste treatment crisis.

Current ideas in this regard include the following: Current controls will be made more flexible so that permitted firms can collect waste and store it in storage centers. However, treatment facilities must be completed within two years. Another possibility is to allow firms to collect waste clearance and treatment fees. Fees and/or subsidies earmarked for waste treatment, however, must be entrusted to financial institutions. Only if the firms carry out treatment within two years will the money be released to them.

As for the scope of future subsidies, they will at least cover fees for pre-construction activities such as planning and design and performing EIAs and soil/geological analyses.

Because there is currently no clear regulatory criteria for "storage," regulatory guidelines regarding assistance and subsidies for storage centers must be added to the *Regulations Governing Management Assistance for Public/Private Waste Clearance and Treatment Organizations*.

Collection Rate of Quantity-based Air Pollution Fee Hits 90%

Nearly 5,000 firms have already paid the FY1999 first quarter (quantity-based) air pollution fee, and over 1,600 firms have been added to the delinquent payment list. The total amount collected comes to more than 805 million NT dollars -- 90% of the originally anticipated amount. It was found that several firms using the sampling analysis method underreported emissions. For these firms, smokestack emissions monitoring and site inspections will be used to judge the accuracy of reported emission levels. In related developments, the EPA will strengthen the management of contract analysis organizations. Targets have already been set and relevant organizations will be reviewed as needed.

Since July 1 of last year, the air pollution fee collection system has been in its second stage, and air pollution fees are now being collected based on the actual emissions of sulfur oxides (SO_X) and nitrogen oxides (NO_X) from stationary pollution sources. In order to calculate air pollution emission amounts, public and private sites must, on a quarterly basis, calculate pollution emission amounts and remit the proper fee.

Through quantity-based air pollution fee collection measures, environmental agencies can better grasp each type of pollutants and their emitted amounts. The success or failure of quantity-based fee collection will play a key role in the implementation of the total pollution quantity control (TPQC) system. Currently, initial and secondary reviews of the first quarter's air pollution fee collection activities, as well as site reviews, have nearly been completed. To further the smooth implementation of the overall system, the EPA recently reviewed the results of first quarter fee collection.

Studies indicate that 4,958 sites have remitted the air pollution fee, and a total of 805 million NT dollars has been collected -- 90% of original collection projections.

According to initial estimates, 7,878 sites should have remitted fees. Of these 1,471 sites are not required to remit fees because they use low pollution power sources (such as electricity, LNG, and LPG) or because they have stopped operations. Another 1,632 sites have not paid their fees and have been added to the delinquent payment list. The majority of firms yet to pay their fees are small and medium-size enterprises. The number of these firms is large, but the relative scale of each site is small and the fees each is required to pay is low. As a result, fee collection was able to hit 90% of the estimated total amount.

Of the firms that remitted fees, those in the power generation industry have paid the most. Remitted fees for this industry totaled over 536 million NT dollars, about 66% of the total amount collected. These firms, however, only comprise 0.54% of the total number of firms remitting air pollution fees.

Traditional large sources of industrial pollution, such as firms in the petrochemical, metal fabrication, textiles, oil refining, pulp and paper, cement, and food industries remitted a total of 219 million NT dollars. This figure comprises 27.2% of the total remitted amount, and the number of firms equals 50.8% of total firms required to pay the fees. Other small and medium-size pollution sources paid 6.2% of the total, and the number of firms comprised 48.6% of firms required to pay the fees.

By looking at distribution based on the amounts paid by firm type, it becomes clear that for the first quarter the number of firms paying under 10,000 NT dollars is the greatest, comprising 53% of the total. The total amount collected from this group, however, equals only 1.1% of the total amount collected. Firms that remitted between 10 and 100 thousand NT dollars was the second largest group. They made up 31.5% of all firms and paid 6.1% of total receipts. Firms paying over one million NT dollars were

in the minority at 7.5%. The fees they paid, however, totaled 92.6%.

As for pollution quantity monitoring methods, most firms (comprising 72% of total emissions) used continuous emissions monitoring systems. At 10% of emissions, the fewest number of firms used emission factors, and firms emitting 18% of total emissions used the sampling analysis method.Key to successfully collecting air pollution fees is being able to firmly grasp air emission quantities. After the initial review of first quarter results, the EPA discovered that several firms tended to underreport emission quantities.

In response, the EPA has already returned problematic monitoring reports to the respective firms and has requested an explanation for the discrepancies. If a reasonable explanation cannot be provided, the EPA will base collection enforcement on emission factors. To clear up this problem, the EPA will also target sites suspected of underreporting emission quantities by ordering random sampling of smokestack emissions and/or performing site inspections.

Moreover, the EPA will strengthen quality management of environmental monitoring activities. In the first quarter a total of 1,474 smokestacks on 704 sites were monitored and inspected. The EPA has reviewed the results of these inspections and has identified the contract analysis organizations that had the highest number of underreported monitoring results. In order to raise the quality and credibility of monitoring and inspection activities, contract analysis organizations will be required to compare smokestack emissions monitoring results with analyses of sulfur content of the fuel used by a given emission source. The analysis organizations will also be required to ensure the operation status at a given time.

First Auto Recall Case Underway

In October 1998, U.S. EPA ordered the recall of a Mitsubishi model of automobile that was found to exceed NO_X emissions levels due to failed emissions control parts. The Taiwan EPA recently followed suit and requested the importer of this model of car to recall and repair all 93 automobiles in Taiwan within three months. Follow up random testing will be performed and if further non-compliance is discovered, the importer can be fined NT$200,000 per vehicle.

Since the EPA's September 1998 announcement of *Guidelines Concerning the Recall and Repair of In-Use Motor Vehicles*, the first case of an automobile recall request recently materialized. The EPA has ordered the recall of all 1995 U.S.-made Mitsubishi Eclipse RS 2.0 M5 3D automobiles in Taiwan. This car model's emission of nitrogen oxides (NO_X) has been found to exceed legal standards due to failed emission control parts. The Taiwan EPA's decision follows a similar recall order for this model car made by the U.S. EPA in October, 1998.

According to the Guidelines stated above, new in-use automobiles must comply with relevant emission standards for five years or 80,000 kilometers. If tests made in accordance with the Guidelines reveal that a given automobile engine series or model do not comply with legal requirements, the EPA can request the manufacturer or importer to recall and repair cars that have already been sold.

If, however, a given car model's emissions have not yet been confirmed through testing by the EPA, the manufacturer or importer can, under certain circumstances, still be ordered to initiate a recall. If the manufacturer or importer itself determines that one of its car model's emissions are not in compliance, or if another country's environmental authority has announced a recall order for a car on the road in Taiwan, then the manufacturer or importer in question can submit a recall and repair plan to the Taiwan EPA. Following EPA approval of the plan, recall and repair activities must then be initiated.

When the EPA received the information regarding the recall case in the U.S., it began discussions with the relevant importer. This importer has already submitted a recall and repair plan and has agreed, through its distributors, to recall all of the cars of the model in question. Inspection, repair, and parts replacement will be provided free of charge to car owners.

According to the import firm's information, this recall activity involves 93 automobiles currently on the road in Taiwan. The repair measures the firm has promised to provide include inspection or replacement of the fuel pressure regulator, readjustment or replacement of the accelerator unit, and replacement of the double-pass air injection system. These and other related parts will be replaced by parts from an emissions recall kit.

The EPA has approved the firm's recall and repair plan. The firm will now have three months to complete at least 70% of the recall and repair activities (in other words, 65 cars must be repaired). At a later date, the EPA will commission Taiwan's Industrial Technology Research Institute to perform random testing of the cars in question. If these tests reveal that the cars are still out of compliance with emission standards, the importer can be penalized according to Articles 36 and 60 of the *Air Pollution Control Act*. The importer can be fined NT$200,000 per vehicle.

In related news, the EPA is nearing completion of its plan to randomly test high-pollution vehicles. This plan, initiated last year, uses infrared remote monitoring technology to perform large-scale screening of vehicles. Thirty types of high-pollution vehicles have been identified and random testing on 150 vehicles has begun. To date, 100 vehicles have been tested, but none have been found to be out of compliance with emission standards.

The Mitsubishi model mentioned above was not on the list of vehicles screened for

emissions. The reason being that there are very few cars of this model on the road, and the remote testing sample size is very large. In the future, the EPA will include this model of car (and other years of this model) on a priority watch list for potential recall.

Transboundary Movement Control of Waste to be Expanded

In view of the international incident that arose following the Formosa Plastic Corporation's shipment of mercury-contaminated sludge to Cambodia, the EPA will add stipulations to the *Waste Disposal Act* that will include the transboundary movement of some general waste and general industrial waste items within the scope of regulatory control. This decision was also made in consideration of the Basel Convention's trends regarding waste classification and management. To assist customs officials and environmental agency personnel identify hazardous waste during the import/export inspections of waste, a *Reference Guide for Identifying Suspected Hazardous Waste* will likely be completed before July.

According to EPA data, no hazardous industrial waste was approved for import into Taiwan between 1993 and November, 1998. On the other hand, 47,917 tons of hazardous industrial waste was approved for export. This amount is only a small fraction of the total amount of domestically produced hazardous waste. Nonetheless, the EPA decided early on to adhere to the development of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (hereinafter referred to as the "Basel Convention"). As international controls on the transboundary movement of hazardous waste have become increasingly strict, the EPA recently undertook a review of the currently enacted system for controlling the import and export of hazardous waste.

In order to improve the understanding of customs officials and environmental agency personnel regarding the import and export of hazardous waste and the current status of the Basel Convention, the EPA organized a February 3 presentation on these issues. During the meeting, the EPA presented the initial draft of the *Reference Guide for Identifying Suspected Hazardous Waste*.

Attendees to the aforementioned meeting decided that, in line with the Basel Convention's appendices regarding hazardous waste classification and management trends, upgrading the regulatory status of managing transboundary movement should be a key focus of future amendments.

Annex 8 (List A) of the Basel Convention currently lists for control 59 items. A system used by OECD countries has identified 125 items for control (the "red" and "amber" lists). Because each country's system for setting standards and classifications for hazardous waste is different, the spirit of the Basel Convention maintains that identification of waste as "hazardous" is the right of the country receiving the waste shipment. With this in mind, Taiwan must expand the regulatory scope concerning hazardous waste import/export. The scope of "hazardous waste," as defined by Article 18 of the *Waste Disposal Act*, should be expanded to include some items of general industrial waste and general (municipal) waste.

Article 18 of Taiwan's *Waste Disposal Act* only focuses on the regulation of transboundary movement of industrial waste classified in Taiwan as "hazardous."

Controls on the import/export of general industrial waste and general refuse are based on regulation such as the *Standards for Industrial Waste Storage, Collection and Treatment Methods and Facilities* and the *Regulations Governing Management Assistance for Public/Private Waste Clearance and Treatment Organizations.* Therefore, in order to effectively control the transboundary movement of waste, the EPA will consider upgrading related regulations to the level of a regulatory act and strengthening penalties for regulatory violations.

Initial Draft of Air Act Enforcement Rules Completed

The EPA recently completed a thorough review and modification of the *Air Pollution Control Act Enforcement Rules* and submitted the draft to the Executive Yuan at the end of February. Amendments to other related regulations will be finished by the end of March. Also, the EPA estimates that control area plans will be completed by June this year, at the earliest, or by the end of the year at the latest. As for implementing TPQC areas, SO_x and NO_x will the first pollutants targeted.

This year, the Air Pollution Control Act underwent its third amendment process. These changes integrated strategies for total pollutant quantity control (TPQC) and clean fuels, and established the system of total air pollution control zones. Because of these sweeping revisions, related regulatory systems must also undergo major modifications. Of these, the *Air Pollution Control Act Enforcement Rules* had the most urgent need for amendment. The EPA recently completed revisions to the enforcement rules, the key points of which include the following:

1. The scope of control of toxic air pollutants was expanded.
2. Pollution source classification principles were modified in order to further clarify the scope of mobile and stationary pollution sources.
3. Following the downsizing of the Taiwan Provincial Government, adjustments were made to the jurisdictional limits of each level of competent authority; and regulations were reviewed for their suitability to current needs.
4. Stipulate the methodology to determine whether air pollution control zones or TPQC areas comply with air quality standards; and, establish the basis for classifying these zones and areas.
5. Stipulate the content of central competent authority plans for setting TPQCs; and, stipulate the content of air pollution control plans as set by local-level government agencies.
6. Revise the principles for determining the location and number of general air quality monitoring stations.
7. Set requirements for stationary pollution sources to install continuous emissions monitoring equipment; and set time requirements and other regulations for real-time reporting to competent authorities.

8. Require stationary pollution sources to include pollutant emission concentrations and operating conditions in submitted emissions monitoring records, and set relevant requirements for operation.
9. Amend regulations concerning visual inspection of automobile emissions.
10. Stipulate methods for performing periodic automobile emissions testing.
11. Stipulate requirements for extending improvement deadlines, defining improvement plan contents, receiving agency, tracking of implementation status, and establishing methods for determining improvements that have not been implemented. These changes will unify enforcement activities and clarify for firms their rights and responsibilities.

As for implementation timeframe, the EPA submitted the draft to the Executive Yuan for review at the end of February. Control area planning will go into effect at the end of June this year, at the earliest, and by the end of the year at the latest. Due to the necessity of complying with EIA reviews and other requirements such as allowable emission increase amounts, additional support measures will be added at the end of the year, depending on degree of urgency.

As for the implementation of TPQCs, the central air quality zone will be used as a pilot demonstration area. And, because the tools for controlling relevant SO_X and NO_X pollutants are relatively mature, TPQC activities will likely first focus on these two pollutants.

Dry Cleaning Solvent Recovery Rate to be Set at 85%

The *Air Pollution Control and Emission Standards for the Dry Cleaning Industry* require dry cleaning firms to recover more than 85% of their cleaning solvents (by weight). To prevent too heavy a burden from being placed on small-scale firms, the draft standards will be promulgated in rounds according to capacity of dry cleaning equipment and the annual amount of solvent use. The draft authorizes local-level competent authorities to determine whether to regulate firms that use petroleum-based solvent dry cleaning machines with a capacity under 15 kg.

Taiwan has between 8,000 and 10,000 dry cleaning firms. Collectively, these firms emit between five and six thousand tons of volatile organic compounds (VOCs) per year, roughly equal to VOC emissions from the semiconductor industry. Both these groups are two of the largest sources for VOC emissions in Taiwan. Because most dry cleaners are located in densely populated areas, their emissions pose a direct threat to human health and local air quality.

Due to the large number and small scale of dry cleaning firms, auditing emissions is difficult. Because of this, the EPA decided to implement a source control principle. Dry cleaners will be required to use equipment with installed solvent recovery dryers, and

they must comply with recovery standards. The EPA has also adopted the principle of phased-in controls and will implement controls based on capacity of cleaning equipment and the annual amount of solvent use.

The EPA contracted the Industrial Technology Research Institute (ITRI) to research best available control technology (BACT) for the dry cleaning industry. This study focused on current technologies such as frozen recovery, active carbon absorption, etc. and analyzed initial equipment purchase costs, operation costs, treatment effectiveness, environmental impacts, etc. The study concluded that the BACT for petroleum-series dry cleaners is the frozen technique. When localized into Taiwan, this BACT has a treatment effectiveness of 90%. Therefore, an 85% recovery rate was set as the standard.

When drafting the *Air Pollution Control and Emission Standards for the Dry Cleaning Industry*, the EPA used the aforementioned ITRI study as the basis for setting the standards. Dry cleaning shops that use petroleum-based dry cleaning solvents will be required to install frozen recovery equipment or other more effective recovery equipment. The recovery rate for these solvents must be at least 85% (based on weight).

To minimize the impact on smaller dry cleaning firms, the EPA will promulgate the standards in rounds according to the cleaning capacity of the equipment in use and the annual amount of solvent use. In addition, the draft standards will require local governments to set controls, as needed, for firms that use petroleum-series drying machines with a capacity of 15 kg or less.

For firms that use perchloroethylene and other non-petroleum based solvents in existing drying machines, the draft standards set a transition improvement period that will be in effect until the end of June this year.

It is estimated that after the draft is formally announced, VOC emissions will be reduced by between 3,500 to 4,000 tons per year. The EPA expects to announce the draft in the near future.

630 Sites Exempted from Air Permitting Requirements

The EPA recently announced the liberalization of air pollution permitting requirements for some sites in industries such as food products, steel compaction, food oil, leather finishing, plastic products, and printing, dyeing, and finishing. This policy change means that more than 1,200 public and privately operated sites, about 630 companies (56%), that were originally required to obtain permits will no longer be required to do so.

The EPA recently held discussions regarding the liberalization of air pollution related regulations. Following the easing of restrictions concerning specialized environmental personnel, the EPA announced additional amendments on January 22. Installation, modification, and operating permit requirements for some 1st to 7th round

sites will also be liberalized. This revision takes small-scale, low-level pollution sources out of the scope of permitting control.

In the past, the types of processes that needed to obtain air permits were announced by the EPA. Because the scope of announced process was often very broad, however, specific firms were often unclear about permitting requirements. The new revisions, taking into account previous clarifications regarding permitting scope and the opinion of industry, have taken small pollution sources out of the scope of control.

Industry groups affected by these amendments include food product manufacturers, crushed steel firms, pet food producers, food oil producers, electric wire manufacturers, electric cable manufacturers, leather finishing firms, plastic product manufacturers, basic chemical manufacturers, printing/dyeing/finishing firms. More than 1,200 sites will be affected by this policy change.

The EPA predicts that about 630 sites, or 56% of those that have been required to obtain permits, will no longer be required to do so. Moreover, these sites account for only 1% of the total amount of volatile organic compounds (VOCs) emitted by originally announced firms.

News Briefs

Further Simplifications Made to Air Permitting Process

Following the downsizing of the Taiwan Provincial Government, and to support the enhancement of administrative efficiency, the EPA on January 11 decided to amend regulations concerning air pollution permitting. The initial and secondary review of permits for the installation, modification, and operation of air pollution sources have been combined. The number of days required for reviewing installation and modification permits has been reduced from 40 to 30. The number of days for submitting supplemental documentation has been shortened from 180 days to 90 days. Operation permit review has also been cut, from 35 to 30 days, and the inspection report review process has been shortened from 30 to 15 days. The number of days for submitting supplemental documentation has been shortened from 180 days to 90 days.

On-line Reporting of Industrial Waste Treatment Formally Regulated

The EPA recently stepped up implementation of on-line industrial waste reporting. In order to clarify the legal footing of this policy, added on-line reporting as one of the listed reporting methods in the *Standards for Industrial Waste Storage, Collection and Treatment Methods and Facilities*. In addition to on-line reporting requirements for hazardous industrial waste, the six-copy manifest control system will be retained.

New Version of Public Dispute Settlement White Paper Due Out in August

In 1993, the first version of the Public Dispute Settlement White Paper was published. To prepare an updated version, the EPA has commissioned several academics to collect dispute settlement related information from the past six years and track the development of the cases highlighted in the original version. Statistical analyses of the cases will also be performed. The new version of the White Paper is due out in August this year.