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In this issue . . .

- Environmental Policy Monthly Completes First Year of Circulation: A Word from the Editor-in-Chief
- *Feature Article*
The History and Performance of the R.O.C.'s EIA System
- *A Look Inside the EPA*
The Comprehensive Planning Bureau
- The National Energy Conference Reaches Conclusions on Greenhouse Gas Reduction
- R.O.C. and Canada Initiate Mutual Recognition of Eco-label Schemes
- Studies Indicate 80% of Urban Air Pollution Created by Motor Vehicles
- General Industrial Waste Exchange Operational Review Guidelines Readied
- EPA Actively Promotes Remote Sensing of Car Emissions
- Public Petitions for Environmental Improvement on the Rise
- EPA to Announce Third Round of General Industrial Waste Items for Reuse
- Draft of Recycling Organization Management Regulations Completed
- Study Recommends Strengthening EMS Incentives
- News Briefs

Environmental Policy Monthly Completes First Year of Circulation: A Word from the Editor-in-Chief

Both environmental protection and internationalization are key policy objectives of the Taiwan government. Because environmental regulations and policies affect international investment decisions, it is important that environmental policy developments and achievements in Taiwan are effectively communicated to the international community. With this in mind, the EPA began publishing the English-language Environmental Policy Monthly (EPM) in July, 1997.

Over the EPM's first year of circulation, we received generally good reviews from our readers. In the spirit of continual improvement, however, the EPA has made a few changes to EPM circulation and content:

1. Larger audience: Apart from currently targeted readers, the mailing list will be expanded to include the representative offices of foreign institutions, relevant

domestic agencies, and academic institutions. Interested international firms, organizations and media will also receive the monthly.

2. More pages: Due to the limited size of the publication in the past, important information had to be occasionally left out. To ensure that readers have full access to policy-making trends at the EPA, the EPM has been expanded to a twelve-page format.
3. Richer content: As readers have on the whole expressed satisfaction with content, we have not changed the selection of articles. Apart from reporting on policy developments, each issue will have a feature article that introduces basic environmental policies and reports on current environmental conditions. Another feature article will introduce the structure and scope of responsibility of individual departments within the EPA. Finally, to the beginning of each article, we have added a brief abstract that summarizes article content.

We are confident that these changes will allow the EPM to better meet the needs of international readers as well as increase the transparency of environmental policy-making in Taiwan. We appreciate your continued encouragement and support, and we welcome any suggestions that might help us improve this publication.

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Feature Article

The History and Performance of the R.O.C.'s EIA System

Prior to the *Environmental Impact Assessment Act* becoming law in December, 1994, a range of environmental impact assessment (EIA) policies and activities were being implemented. In 1985, fourteen major projects including the Liwuhsi Hydroelectric Power Station and the northern section of Taiwan's Second Freeway were selected for environmental impact assessment trial-runs. In 1987, the central government's *Phase One Environmental Protection Basic Policy* clearly listed strengthening EIA work as an important environmental policy objective. Moreover, the *EIA Implementation Strengthening Follow-up Plan* was approved by the Executive Yuan in 1991 and amended in 1992.

After the *EIA Act* was passed, the EPA actively initiated a series of regulations to establish a framework for implementing EIA policy. These included the *Environmental Impact Assessment Act Enforcement Rules*, *Regulations Governing the Review and Collection of EIA Document Fees*, *Criteria for Determining Environmental Impact Assessment Items and Scope for Development Activities*, *EIA Review Committee Member Organization Regulations*, and others. Once the regulatory work was completed, EIA procedures and guidelines were evaluated, streamlined and improved over the years.

From 1985 to May, 1998, 350 EIA application cases had been approved by the EPA. Key implementation problems drawn from years of experience are summarized by the EPA as follows:

1. Some developers only pay attention to procedures and do not carry out items specified as necessary in EIA conclusions.

2. Some EIA reports are made after the project was established, are carried out over an inadequate period of time, contain results that address only a portion of the negative environmental effects with effective improvement of pollution prevention or monitoring system structures, and are unable to provide reasonable alternative projects.
3. Environmental impact simulation models often operate independently and can produce conflicting results. EIA models used by developers to simulate the impact on environmental elements such as ecology, society and culture are the most lacking.
4. Local environmental data currently available is inadequate and, in some cases, spread between many departments. Compilation and file generation for systems is lacking. This hinders the effective use of existing information and leads to frequent highly deviating assessment results.
5. The content of environmental impact statements (EIS) is not well organized, undermining the actual value of the submitted plans.
6. Inadequate regulations on localized environmental quality, resource utilization methods, and resource protection procedures leave developers without proper guidelines for action.

To address these problems, the EPA has in recent years made several improvements to EIA related systems. These include:

1. The EPA has accelerated total systematization of EIA and carried out EIA reviews and supervision. EIA supervision and implementation principles and manuals on the supervision of mountain slope and coastal development projects have already been established. The EPA has also set standardized formats that clarify the rights and responsibilities of EIA supervisory and management agencies. In recent years, the EPA further drafted items and operating methods for target industry competent authorities to use in their EIA supervisory roles. In 1998, the EPA began developing routine reporting formats for target industry competent authority EIA tracking and evaluation discussions.
2. The EPA has regulated the techniques used for environmental factor impact simulation. Conducted investigations, research and created files on sensitive environmental areas throughout Taiwan. Provided CD ROMs to outside circles as a reference. Research on the technical scope of environmental impact forecast models for air, noise, vibration, water, economics and culture have already been completed and a comprehensive set of technical scopes for the environmental factors of EIAs will be established next.
3. The EPA accelerated administrative reform to raise the efficiency of reviews. Improvements on a number of fronts currently being carried out by the EPA include the following:
 - A. Launching of a time-saving joint-examination method. Currently, EIAs for land use modification, soil and land conservation planning, pollution control measures planning, emissions permit examination, factory registration and modification permitting have all adopted the joint-examination method.

- B. Drafting of the *Environmental Impact Assessment Review Operating Reference Manual* and provided examples of actual operating procedures as a reference for local environmental agencies.
 - C. Strengthening of initial review meetings for the EIA of major development construction projects.
 - D. Requesting that target industry competent authorities develop their own regulations of which portions involving the *EIA Act* come under EPA authority. Sixteen items have been completed, nine are being checked or revised, and nine are being researched.
 - E. Strengthening consultation to developers, established an EIA information assistance window and reducing the number of rejected documents.
4. The EPA has also established a certification system for EIA professionals in order to support the growth of small- and medium-size EIA consultancies. An EIA certification system was added to the *Environmental Impact Assessment Act Enforcement Rules* thereby encouraging EIA consultants to join the EPA's EIA consultant certification system. The promulgation of the new enforcement rules will provide small- and medium-size EIA consultancies with more room for competition with the larger players.

Apart from the items mentioned above, the EPA put in place the *Government Policy EIA Operation Guidelines* in September, 1997. These guidelines set the framework for assessing and reducing the impacts government policies have on the environment.

In the future, the EPA will base EIA approval on the degree to which needs are met in regions that are open to development and those that restrict it, set phased development requirements on various industrial development policies, and analyze information on development regions and their needs as stipulated in the *Comprehensive National Land Development Plan*.

A Look Inside the EPA

The Comprehensive Planning Bureau

According to the series of regulations establishing the EPA's organizational structure, the EPA's Comprehensive Planning Bureau is primarily responsible for policy formulation, administrative policy planning, personnel training, international cooperation, science and technology integration, environmental data compilation, environmental conservation and education, environmental impact assessments (EIAs) and other comprehensive environmental protection work. In terms of organizational structure, the Bureau has a General Director, Deputy General Director and three higher-level staff. Reporting to them are four Divisions, each with a Director and supporting and administrative staff. The Divisions have the following responsibilities:

Division 1:

1. Research, set and compile long-term plans for national environmental protection (EP).
2. Research, set and compile annual guiding principles, plans and reports on administrative policies of the EPA.

3. Examine and approve annual administrative EP plans of provincial/municipal governments.
4. Plan the recruitment, allocation and overall structure of EP personnel.
5. Draft, amend, interpret, and publicize the *Environmental Protection Fundamental Act*.
6. Supervise and guide general EP personnel training plans.
7. Set and implement EP policies and projects.
8. Other items that are not the responsibility of the other Divisions.

Division 2:

1. Supervise EIA development activities.
2. Assist competent authorities of target industries with the tracking of EIA cases.
3. Research, set, compile and approve EP-related technology research and development plans.
4. Compile a White Paper on EP.
5. Collect and manage library information.
6. Approve trip plans and review trip reports of EP personnel traveling overseas for work related purposes.
7. Facilitate and assist cross-strait exchanges and overseas trips of EP personnel under the Ministry of Economic Affairs.

Division 3:

1. Develop and launch environmental education policies and projects.
2. Develop, carry out, oversee and evaluate EP informational and promotional plans.
3. Draft and promote environmental education supplementary teaching materials.
4. Oversee, communicate with and encourage environmental interest groups and foundations.
5. Communicate with, supervise and encourage EP enterprises.
6. Conduct opinion polls on the public's perception of EP issues.

Division 4:

1. Develop, revise, explain and publicize EIA regulations.
2. Draft manuals on specialized EIA personnel training and techniques.
3. Examine and approve EIA reports.
4. Plan, communicate, launch and coordinate natural resource conservation activities.
5. Investigate, collect, manage, research, analyze and report basic environmental data.
6. Other items related to EIA policies and processes.

The National Energy Conference Reaches Conclusions on Greenhouse Gas Reduction

The *National Energy Conference* reached conclusions on greenhouse gas reduction targets and how to achieve them. It was emphasized that market forces should be respected regarding industry adjustments and that nuclear power is the least favorable approach to developing alternative energy sources. Premier Vincent Siew noted that energy conservation is a “no regret” endeavor and, over the next five years, the government will invest NT\$10 billion in energy conservation and clean energy R&D. The number of nuclear power plants and the proportion of electricity generated by nuclear power will not increase prior to 2020.

On May 27, the closely watched *National Energy Conference* came to a close. To ensure that the two-day conference progressed smoothly, the Ministry of Economic Affairs (MOEA) divided the conference into the following categories: 1) Framework Convention on Climate Change (FCCC) development trends and response measures; 2) energy policy and structural adjustments; 3) industry policy and structural adjustments; 4) energy efficiency and technology developments; and 5) additional energy policy instruments.

Although the conference was met with demonstrations from environmental groups and anti-nuclear activists and in spite of dissenting views among some of the participants, Vice Premier Liu Chao-Shiuan's report on conclusions reached at the conference represented the views of most participants. The conclusions set greenhouse gas reduction targets at 2000 levels (per capita emissions volume of 10 tons) and set a margin for increase or decrease at 10%. As a reference for setting related policy, the year 2020 was set as the year for achieving emission volume targets.

Conclusions reached at the *National Energy Conference*

Item	Main conclusions:
FCCC development trends and response measures	<ol style="list-style-type: none">1. Endeavor to have Taiwan defined as a newly industrialized country. Targeted greenhouse gas reduction volumes should be reasonable and comparable with other nations.2. Reduction volume base-year set at 2000 (average per-capita emissions volume of ten tons). 2020 time-frame set as a reference for setting policy. Research and set alternative targets based on 2012 and 2025 time-frames.3. Estimates to be conducted every two to four years.
Energy policy and structural adjustments	<ol style="list-style-type: none">4. No change in current energy policy, but promotion of energy conservation and raising of energy efficiency will have priority.5. Continue to promote steam-electricity co-generation, hydroelectric and re-generated energy. Liquid natural gas to be heavily promoted.6. Apart from completing work on the No. 4 nuclear power plant, no additional nuclear power facilities will be built prior to 2020.7. The proportion of electricity generation in the overall energy structure is to be adjusted.
Industrial policy and structural adjustments	<ol style="list-style-type: none">8. Market forces should be respected as a mechanism for adjusting industrial development policies. Existing industries are encouraged to renew their facilities. Add industries that feature high added value

incentives, low energy waste and a high degree of productive relationships with other industries.

9. Energy-intensive enterprises critical to national economic infrastructure will, in principle, continue to be encouraged.
10. Assist major industry associations, develop self initiated reduction target plans.
11. Research whether financial preferences including land tax and other levies of major industries meet WTO stipulations.
- Energy efficiency and technology developments 12. Raise energy efficiency of the industrial, transportation, residential and commercial sectors.
13. Strengthen and promote development and use of new energy sources.
14. Promote fuel tax based on fuel consumption rather than vehicle type.
- Energy policy instruments 15. Price of energy should reflect costs, including environmental costs.
16. Research carbon tax, energy tax, and system of tradable emissions rights.
17. Accommodate implementation of international system of tradable emissions permits and encourage international cooperation to make reductions.
18. Strengthen promotion of energy conservation.

In his closing remarks, Premier Siew said that conserving energy, raising energy efficiency, R&D of new energy source technologies and the development of clean energy are “no regret” endeavors. With these aims in mind, the government will invest NT\$10 billion in energy funds over the next five years in R&D and promotion of energy conservation and clean energy.

Premier Siew noted that due to possible changes in international consensus on reduction values, the 9 to 11 ton per capita CO₂ emissions volume reference value for 2020 should be reconsidered once every two to four years.

On the controversial topic of nuclear power generation, Premier Siew noted that Taiwan is highly dependent on energy imports. Although no energy source should be casually ruled-out, since a stable and diversified supply of energy must be maintained, the Premier said that nuclear power is not the answer to the problem of CO₂ emissions. Based on agreements made at conference, Premier Siew announced in clear terms that prior to 2020, no new nuclear power plants would be built and nuclear energy as a proportion of total installed electric power capacity would not exceed 1998 levels.

In response to these conclusions, a sustainable development promotion association formed by a group of legislators issued a statement that included the following points:

1. The Executive Yuan should, based on the conclusions, create policies and budgets, and establish tracking and progress controls that are annually evaluated.
2. The Executive Yuan should create criteria that can be estimated and explain them during the Premier's administrative policy report.

3. The Executive Yuan should integrate the organizations related to sustainable development and seek to upgrade the EPA to ministerial status in the government, and plan the overall management of sustainable development related businesses.
4. Total opposition to the use of nuclear energy as a way to achieve CO₂ reductions.

MOEA Minister Wang Chih-kang indicated that the related agencies and departments would immediately set and implement related regulations and measures of the agreed upon items. Items not agreed upon will be discussed in more depth with the hope of reaching a consensus on them as soon as possible.

R.O.C. and Canada Initiate Mutual Recognition of Eco-label Schemes

Following Canada's lead, the EPA's Eco-label Review Committee recently passed jointly developed drafts of eco-label specification standards for computer pointing devices and keyboards. As Taiwan and Canada have already agreed to mutually recognize eco-labels and inspection reports, passage of the draft makes this mutual eco-label recognition pact the first of its kind worldwide.

On May 28, the EPA's Eco-label Review Committee examined and passed drafts of eco-label (called the "Green Mark" in Taiwan) specification criteria for computer pointing devices and keyboards. The passage of this draft formally inaugurated work between Taiwan and Canada on mutual eco-label recognition. With the popularization of green consumerism, similar eco-label systems are gradually being launched around the world. There currently are 29 eco-label systems worldwide involving some 53 nations. Germany has the longest history of using an eco-label system. Japan, the US and Taiwan have been using eco-label systems for about seven or eight years and about 80% of the remaining nations for less than three years.

As green purchasing policies are expected to become a potential barrier to trade, the EPA has in recent years been promoting use of the Green Mark in Taiwan while actively looking for mutual recognition opportunities via channels like the Environmental and Development Foundation, organizer of the Green Mark system. The roots of the partnership between Taiwan and Canada go back three years when a high degree of similarity between the systems of both nations and considerable willingness on both sides encouraged them to explore the potential for mutual eco-label recognition.

During the course of joint research, Taiwan's Environmental and Development Foundation and TerraChoice Environmental Services Inc. (the company authorized by Environment Canada to manage Canadian eco-labelling) discovered that mutual recognition would be extremely difficult due to different system guidelines and qualification criteria. It was therefore decided that joint development of specification criteria should be pursued to facilitate mutual recognition.

Taiwan and Canada inked the agreement at the end of 1997 after selection of an implementation model. Apart from mutual eco-label recognition, they also authorized mutually recognized application document procedures that include eco-label inspection report requirements, certification procedures and individual product specification standards. In other words, after obtaining the Green Mark, Taiwan companies can automatically obtain the Canadian eco-label by completing administrative procedures at the Environmental and Development Foundation.

According to the Environmental and Development Foundation, although a regional block of nations has jointly developed and implemented a new set of mutually recognized standards, the agreement between Taiwan and Canada is currently the only case where existing eco-label systems of different nations have been mutually recognized. As the only one of its kind, the agreement will have far reaching implications for the promotion of eco-label systems and green consumerism around the world.

Studies Indicate 80% of Urban Air Pollution Created by Motor Vehicles

The EPA took advantage of routine air raid drills in three major urban areas to take air quality readings. The results indicated that CO and NO_x concentrations fell by about 80% after vehicles came to a halt and that levels quickly returned to normal once traffic began moving.

Comparison of air pollution in urban areas between traffic and non-traffic situations				
Pollutant		Taipei	Taichung	Kaohsiung
CO	Avg. concentration (ppm)	3.00	1.50	3.00
	Vehicles stationary (ppm)	0.50	0.50	0.50
	Reduction (%)	83.33	66.67	83.33
NO _x	Avg. concentration (ppb)	300.00	60.00	200.00
	Vehicles stationary (ppb)	50.00	10.00	50.00
	Reduction (%)	83.33	83.33	75.00

To understand the direct relationship between air quality and motor vehicle emissions, the EPA took advantage of routine air raid drills that prohibit traffic movement to take air quality readings in three major urban areas. In mid-April, air pollution concentration measurements were taken in the Taipei, Taichung and Kaohsiung metropolitan areas. The results indicated that car and motorcycle emissions account for about 80% of air pollutants in those urban areas.

According to data collected during an April 23 air raid drill in the Taipei metropolitan area, carbon monoxide (CO) concentrations taken by ground-based monitoring stations fell rapidly after traffic came to a halt. After 20 minutes, CO concentrations fell from 3 ppm to 0.5 ppm at its lowest stable reading or 17% of normal levels. Nitrogen oxide (NO_x) concentrations fell from 300 ppb to 50 ppb or the same percentage as CO (see table 2). Sulfur oxides (SO_x) did not decline by an appreciable amount relative to the others. Pollutant concentrations quickly returned to their normal levels 15 minutes after the drill ended.

Ground-based monitoring conducted on April 17 during the air raid drill in Taichung metropolitan area followed suit with a rapid drop in CO just 20 minutes after traffic came to a halt. CO concentration fell from 1.5 ppm to 0.5 ppm while NO_x concentration went from 60 ppb to 10 ppb. The concentration of CO₂ shrunk to 50% of normal levels.

Pollutant concentrations quickly returned to their normal levels once vehicles began to move again.

The same scenario took place in the Kaohsiung metropolitan area. Ground-based mobile monitoring stations yielded an 80% drop in CO within 30 minutes and a 25% fall in NO_x. Pollutant concentrations swiftly rebounded to their normal levels after the drill ended.

The survey results clearly indicate the degree to which motor vehicles contribute to air pollution in urban areas. Cars and motorcycles account for about 60% to 80% of CO emissions. In the Taipei and Taichung metropolitan areas, NO_x concentrations fell by 83% on average while that for Kaohsiung declined by only 75% perhaps due to the presence of industrial pollution sources in the area. The fluctuation in SO_x concentration was relatively small probably because it was already at a relatively low level.

The results of the survey could be used as a reference in estimating potential results of emergency response measures adopted during a period of severe air quality degradation. As traffic pollution currently accounts for over 80% of air pollution and is rising steadily, the results also highlight the increasing importance of reducing vehicle-generated emissions.

General Industrial Waste Exchange Operational Review Guidelines Readied

A new EPA regulation will bring industrial waste exchange centers into the legal system eleven years after they were first founded. In the future, an application for reuse will automatically meet regulation requirements once the firm is registered, matched and reviewed by an exchange center.

To promote trading of industrial waste, the EPA and Industrial Development Bureau in 1987 commissioned the Industrial Technology Research Institute (ITRI) to establish industrial waste exchange information service centers for the promotion of industrial waste exchange and reuse. According to ITRI data, in the 11 years since the first center was established, a total of 1,500 cases were handled and 280 exchanges were facilitated amounting to 21 metric tons exchanged, or a direct economic benefit of NT\$1.6 billion (NT\$8,000 per ton). Although the centers have been operating for many years, they have technically been doing so outside the law.

According to Article 31 of the *Industrial Waste Storage, Collection and Processing Methods and Implementation Standards*, apart from organizations that reuse industrial waste items already approved by the EPA for reuse, other organizations that reuse industrial waste must apply to the EPA for permission on a case-by-case basis. As the trading of industrial waste is also considered a form of reuse, such activities must be approved according to the aforesaid regulations. However, many of the successful cases of industrial waste exchange promoted by ITRI were not actually approved through these procedures.

In recognition of the important function of the centers, the EPA decided to bring the exchange and reuse mechanism into the legal system. To this end, the EPA drafted the *General Industrial Waste Items Exchange and Reuse Review Work Guidelines* and recently discussed the draft with relevant organizations. The guidelines encourage organizations to handle their waste via exchange and reuse rather than through disposal

or processing. The EPA aims to make reuse an above-the-board enterprise by providing it with a legal framework and streamlined administrative procedures

The draft stipulates that, in the future, the EPA must commission exchange centers, established by the target industry competent authority, to carry out waste item registration and written review work. The scope of such work shall be limited to general industrial waste. Reuse of hazardous industrial waste must be carried out in accordance with stipulations in the *Regulations Governing the Permitting of Hazardous Industrial Waste Reuse*.

After completing registration and being successfully matched by an exchange center, organizations that generate and reuse waste items must furnish the following details to the exchange center: 1) basic information on the industrial and reuse institutions and supporting documents; 2) waste item source, name, type and quantity; 3) reuse method, methodology, process and purpose; and 4) other documents or items as specified by the EPA.

For cases that pass the review process, exchange centers must present the details to the EPA for evaluation, and the EPA and exchange center may also dispatch personnel to the reuse organization to conduct examinations.

In the future, exchange centers may adopt principles regarding confidentiality, neutrality, and responsiveness to instill confidence among the organizations served. In terms of confidentiality, information provided regarding waste items will not be open to the public. Documents will be confidential and waste items will be identified by a serial number. To remain neutral, the exchange centers will not discuss transportation, recycling costs and other expenditures in order to preserve objectivity. Finally, the exchange centers will provide free information on the supply and demand of waste and related reference data.

Once the guidelines are formally announced, the administrative process for engaging in exchange and reuse of non-hazardous industrial waste will be greatly simplified. A supplier or buyer need only submit a reuse review application to an exchange center which, after review and approval, is immediately sent to the EPA for approval. The applicant can then exchange or reuse non-hazardous industrial waste items without having to pass through numerous layers of government.

EPA Actively Promotes Remote Sensing of Car Emissions

Remote emissions sensing has been in place for three years with some 2.1 million cars having been checked. The EPA now plans to strengthen these efforts, but since accuracy is not yet reliable, remote sensing will be used as a tool for pinpointing emissions rather than as evidence for issuing citations.

Remote emissions testing of vehicles is an advanced detection technology that employs infrared sensors to record the carbon monoxide and hydrocarbon concentration emissions of moving cars. The program is paired with the photographing of vehicle license plates as an approach to large-scale emissions checking of cars in motion that does not interfere with traffic flow.

The EPA launched car emissions remote sensing in 1996 and has been increasing the scale of these efforts ever since. In 1996, 140,000 cars were checked using remote sensing (target vehicle is moving). At the same time, 1,000 cars were also checked using idle testing (target vehicle is stationary) to compare the two methods. In 1997,

checking was carried out simultaneously in the Northern and Southern regions of Taiwan including 16 counties/municipalities. A total of 160,000 cars were checked and notifications sent to 10,000 car owners instructing them to have their vehicles tested and (if necessary) tuned. In 1998, the scale of the plan was expanded to cover the Northern, Central and Southern regions including 12 counties/municipalities. A total of 1.8 million cars were checked and 180,000 notifications sent out. Over the three year period, 2.1 million cars were checked and 200,000 notifications sent out.

Although remote sensing has already become the tool of choice for checking cars in motion, it is currently not a method provided for by law and therefore is not admissible as evidence of an infraction. The current approach is to apply the method indirectly by using it to pinpoint high emissions cars. Owners can then be instructed by letter to have their cars tested and (if necessary) tuned. If the notification does reach the party or the party does not respond to the notification, the EPA will send a list of the names of such individuals to the relevant local-level environmental agency which will contact and instruct the party to have the car tested at a designated testing station. If, according to the *Air Pollution Control Act*, the party fails to have the car tested or the car fails to meet emissions standards, the party will be fined NT\$5,000 to 10,000 or NT\$3,000 to 7,000, respectively..

The EPA clearly listed remote sensing as a legal emissions pinpointing method in amendments to the *Air Pollution Control Act* currently being drafted. The EPA is also moving to further expand the range of applications for remote sensing. By year end, the EPA will assist with implementation of the *Compulsory Testing and Tuning System* by utilizing large scale car data obtained from remote sensing to analyze the make and model of high emissions cars for use in further controls.

Public Petitions for Environmental Improvement on the Rise

A record number of public petitions in 1997 indicate an increasing public demand for improved environmental quality. Moreover, the nature of the petitions shifted back to the personal side with garbage, noise pollution and foul odors topping the list of concerns.

According to EPA data, 94,014 public petition cases were submitted to environmental agencies at all levels of government in 1997. This amounted to an average of 7,834.5 cases per month and 43.36 cases per 10,000 people.

Compared with previous years (see table), the volume of public petition cases increased steadily in 1992~4 and then decreased in 1995~6. The number of cases then leapt by a margin of 22.6% to set an all time record in 1997. This jump suggests that people in Taiwan are demanding an increasingly higher quality of life.

Public petition cases submitted over the years						
	1992	1993	1994	1995	1996	1997
Total	77,547	84,273	86,517	81,693	76,626	94,014
Air pollution (excluding foul odor)	16,916 (21.8%)	18,676 (22.2%)	12,957 (15%)	12,275 (15.1%)	10,962 (14.3%)	12,442 (13.3%)

Foul odor	5,603 (7.2%)	8,186 (9.7%)	10,049 (11.6%)	11,950 (14.6%)	12,685 (16.5%)	13,059 (13.9%)
Water pollution	3,980 (5.2%)	4,801 (5.7%)	4,695 (5.4%)	4,889 (6%)	5,577 (7.3%)	6,152 (6.5%)
Noise pollution	20,328 (26.2%)	19,165 (22.7%)	20,265 (23.4%)	21,149 (25.9%)	19,432 (25.4%)	20,526 (21.8%)
Solid waste	29,805 (38.4%)	32,319 (38.4%)	34,855 (40.3%)	16,839 (20.6%)	13,752 (17.9%)	41,370 (44.0%)
Other	915 (1.2%)	1,126 (1.3%)	3,696 (4.3%)	14,591 (17.9%)	14,248 (18.6%)	465 (0.5%)

In terms of pollution type, solid waste (includes general environmental sanitation) was the largest area of concern with 41,370 cases submitted or 44% of the total. Noise pollution and foul odors came in second and third with 20,526 cases or 21.8% and 13,059 cases or 13.9% respectively. The number of cases involving solid waste grew substantially compared with 1996, however the 1997 figure is misleading because this was the first year when cases regarding general environmental sanitation and solid waste were lumped together. However, even if cases regarding these two pollution types in 1996 are put together and compared with those in 1997, the rate of growth would still reach 49%. Treatment of waste items is therefore still the public's largest environmental concern.

Regarding pollution sources, the general population has been the biggest culprit since 1995 amassing 27,017 cases in 1995~7 or 28.7% of the total. Concerns over industrial, commercial and building construction pollution continued to decline with the proportion of cases regarding industrial pollution rising slightly to 26.7% and commercial pollution accounting for 15.3% or second and third place, respectively.

In terms of pollution location, Taipei City and County took in 20,867 and 13,545 cases respectively with the former accounting for 36.6% of the total. Counties/municipalities with more than 4,000 cases included Tainan City, Taichung County, Chiayi City and Kaohsiung City and County, in that order

By county/municipality, the pollution type that had the highest proportion of cases varied by area. Cases of solid waste and general environmental sanitation ranked first in 17 counties/municipalities and consisted mainly of county road dumping complaints and stray pet collection requests. Cases of foul odor, noise pollution and air pollution ranked first in three counties, the cities of Taichung and Kaohsiung, and Taipei County, respectively.

Noise pollution and solid waste were the most serious problems in the cities of Taipei, Kaohsiung, Keelung, Hsinchu, Taichung, Chiayi and Tainan. In other areas, without distinguishing between industrial or agricultural counties, the first and second worst problems were either solid waste, air pollution or foul odors.

Further comparisons revealed that the majority of solid waste related petitions focused on garbage left on public land, abandoned vehicles, and promotional fliers, in that order. Air pollution petitions focused primarily on factories and secondarily on incineration activities. Such commercial activities as restaurants also frequently incited petitions due to oily smoke belched from kitchen exhaust ducts. Noise pollution

petitions focused on factories, business areas, nearby noises and building construction activities, in that order. Environmental sanitation consisted of stray pet collection requests (mostly cats), bird raising activities, road pollution and ditch obstructions.

Public petition cases submitted in 1997 indicate that people in Taiwan are placing increasing importance on the nuisances that affect them personally such as garbage, noise pollution and foul odors. However, when pollution sources are smaller in scale and difficult to pinpoint, inspection becomes more difficult. This is particularly the case with noise pollution and foul odors, both of which are sensory in nature. These cases are difficult to prove and therefore can easily result in repeated public petitions. The question of how to control pollution of this type will be an important future challenge for the EPA.

EPA to Announce Third Round of General Industrial Waste Items for Reuse

To broaden the recycling and reuse of general industrial waste, the EPA has prepared a draft of the third round of industrial waste items for recycling and reuse to be formally announced. Items in the latest round include waste bleaching earth, wood (whole/part), glass (whole/part), ceramics (pottery, brick, tile and cast sand), individual metal scraps (copper, zinc, aluminum and tin) and metal(s), distillery grain (dregs) and plastic. The addition of furnace residue and collected dust to the items for recycling and reuse, as requested by certain businesses, will be considered in the next round of discussions.

The EPA has actively promoted the recycling and reuse of industrial waste over the years. In July, 1995, the EPA amended and formally announced the *Industrial Waste Storage, Collection and Processing Methods and Implementation Standards* that added articles related to general industrial waste recycling and reuse. In June, 1996, the EPA formally announced the *Unannounced General Industrial Waste Reuse Application Procedures* followed by the *Regulations Governing the Permitting of Hazardous Industrial Waste Reuse* rounding out a full regulatory framework for governing industrial waste reuse.

In 1996 and 1997, the EPA made formal announcements of the second round of general industrial waste items and related regulations. These included waste iron, paper, coal ash, tempered high furnace bricks (cinder), high furnace bricks (cinder), furnace transfer bricks (cinder) and sweetening dregs. Up to now, 63 applications have been checked and approved with 73 metric tons of industrial waste reused each year.

The EPA's Bureau of Solid Waste Control recently completed a draft of the third round of industrial waste items for recycling and reuse to be formally announced. Items in the draft include waste bleaching earth, wood (whole/part), glass (whole/part), ceramics (porcelain, brick, tile and cast sand), individual metal scraps (copper, zinc, aluminum and tin) and metal(s), distillery grain (dregs) and plastic. It is estimated that 1.9 million metric tons of waste from this round of items will be reused each year with an economic value of NT\$2 billion.

To strictly guard against the generation of secondary pollution during the process of reuse, the draft stipulates that the storage and collection of industrial waste items, prior to being processed, must obey the *Industrial Waste Storage, Collection and Processing Methods and Implementation Standards*. Furthermore, the reuse organization is obligated to declare the content, quantity and intended use of the industrial waste items to the environmental authority on a specified periodic basis. The intended use must be

in accordance with related regulations of the target industry competent authority. Intended use either as a raw material or fuel is restricted to registered companies, and use for the latter purpose requires that burning equipment and waste gas emissions is checked and approved by the competent authority.

The draft also places clear restrictions on methods of reuse (see table) and has tried to accommodate the many views of businesses in their formulation. For example, waste clay was listed for use as a fertilizer additive and incendiary agent and restrictions in the proportion of waste clay used as an additive in animal feed were replaced by requirements that national health standards and related agricultural regulations be met. Waste pottery, bricks, tiles and cast sand listed for use as paving material.

Proposed industrial waste for recycling and reuse			
Category	Source	Intended use	Main products registered by reuse organizations
Wood (whole/part)	produced by industry	Lumber raw material, fertilizer and oil absorbent	Wood products, artificial wood grain paneling, activated carbon, paper pulp, bakelite powder, phenol formaldehyde resin, atomic carbon, oil absorbent, fertilizer and plant cultivation soil
Glass (whole/part)	produced by industry and collected by Type II collection organizations	Glass raw material	Glass, glass products and other products
Bleaching earth	produced by food oil manufacturers	Cement raw material and animal feed additive	Cement and animal feed
Ceramics (pottery, brick, tile and cast sand)	produced by ceramics manufacturers	Raw material	Pottery, porcelain, brick and tile related construction materials and related products
Individual metal scraps (copper, zinc, aluminum and tin)	produced by industry and collected by Type II collection organization	Raw material	Copper, zinc, aluminum, tin and related materials
Distillery grain (dregs)	produced by wineries, breweries and distilleries	Animal feed and fertilizer	Animal feed, fertilizer and related products
Plastic	produced by industry and collected by Type II collection organization	Raw material	Plastic (material, pellets and related products)

The EPA will move swiftly to complete formal announcement of waste items. Trade association requests for the addition of furnace residue and collected dust to the list of formally announced items for recycling and reuse will be addressed in the next round of discussions.

Draft of Recycling Organization Management Regulations Completed

The EPA completed a draft of management and assistance guidelines to manage recycling organizations. In the future, organizations that want to collect recycling subsidy funds must register as a certified recycling organization and controls on them must meet the same requirements as collection agents. Recycling organizations will be required to install specialized management personnel instead of technical personnel.

As the resource recycling system is currently state-run, to encourage the private sector to join in, the EPA has actively promoted the *Four-in-One Plan*. However, many private groups that engage in resource recycling often cannot get registered because they fail to meet related stipulations in waste collection and processing organization management regulations. To resolve the problem, the EPA plans to reduce the scope of waste collection and processing organization management regulations and loosen unnecessary administrative regulations.

According to reports, organizations currently engaged in waste and waste container recycling work are primarily governed by *Regulations for the Management of and Consultation to Publicly and Privately Operated Waste Collection and Processing Organizations*. However, because organizations wanting to obtain qualifications must install Grade III technical personnel, many organizations with recycling capability and willingness have no way to directly receive management assistance from the Recycling Fund Management Committee (RFMC). This has led to a shortage of recycling channels.

To improve the situation, the EPA drafted the *Guidelines for the Management and Counseling of Waste Items and Containers Recycling Organizations* for inclusion in the *Regulations Governing Waste Items and Containers Collection and Processing*. The EPA then discussed the draft with relevant businesses in a public hearing on the May 17th.

The draft stipulates that any recycling organizations that recycle items, packaging or containers designated for recycling are the targets of provisions in the guidelines. Recycling organizations that want to apply for subsidy funds from the RFMC must bring related information to the RFMC and apply as a certified recycling organization. Once registered, recycling organizations do not need to install technical collection personnel but must install specialized management personnel (who may also serve as the responsible party to the organization). The recycling organization must also accept RFMC consultation on a specified periodic basis.

In terms of recycling operations, certified recycling organizations, apart from being required to keep daily operational records, must also submit operational records to the RFMC on a quarterly basis.

To ensure that recycling organization management cooperate with collection agent regulations, the draft clearly stipulates that the EPA must, when needed, formally announce designated recycling organizations that must obtain collection agent permission.

At the same time, the EPA also completed a draft that amends some articles in the *Regulations Governing the Management and Counseling of Publicly and Privately Operated Waste Items Collection and Processing Organizations* whereby relevant recycling organizations are excluded from the scope of permitted collection agents.

The period of time for collection and processing technical personnel in a qualified businesses to upgrade from Grade III to Grade II was reduced from two years to one.

The major concern after the regulations are loosened is that businesses will engage in waste collection and processing under the guise of waste recycling. In the future, administrative departments will find it more difficult to keep up with the changes. The draft *Guidelines for the Management and Counseling of Waste Items and Containers Recycling Organizations* is but one of a set of EPA precautionary measures. As there is little opinion from outside circles, the two drafts should be formally announced soon after discussions and public hearings have concluded.

Study Recommends Strengthening EMS Incentives

In addition to implementing research and discussion on EMS related policies, the EPA has contracted consulting organizations to audit companies that have already been certified to the ISO 14001 standard. EMS certification assistance has also been provided to waste treatment facilities. In response to calls from academic experts to strengthen environmental management policy incentives, the EPA research and discuss putting such incentives into related regulations and policies.

To determine the degree to which local businesses have implemented environmental management systems (EMS) and the impact they are having on environment protection work, the EPA, in 1998, commissioned a three related projects. This program utilized consulting organizations to 1) conduct ISO 14001 certification assistance, 2) re-check the EMS of firms that have been certified to ISO 14001, 3) research the feasibility of integrating EMS with environmental regulations.

The first project focused on conducting ISO certification assistance. The EPA chose a local environmental consultancy to select five waste collection and treatment organizations eligible to receive certification assistance. The project also checked the EIA tracking of 26 Grade I waste processing plants. According to the results, three of the five organizations are Grade I processing plants with a good record of performance.

The second project audited the environmental protection records of 32 subjects screened from companies certified prior to August, 1997. Work covered such areas as environmental policy comprehensiveness, continual improvement, pollution prevention and waste reduction records (resource recycling, wastewater reduction and cleaner production) and degree of conformance or disparity in audit results.

The third project researched the degree of integration between environmental management systems and environmental regulations and policies, using the *Air Pollution Control Act* as an example. A typical EMS has three major phases: planning, implementing, and checking. Research findings suggested that most regulatory articles deal with the planning phase of an EMS. Fewer have to do with the implementation phase; and even fewer relate to the checking phase. These findings indicate that to achieve more effective integration, greater emphasis must be placed on regulatory articles related to EMS implementation and checking phases.

After the results were checked, the researchers felt that companies certified to ISO 14001 had good records on the whole. In the area of resource recycling, for example, the proportion of companies with good, average and poor records was estimated at 75%, 21% and 3.1% respectively. Waste water reduction was 54.8% (high), 45.2% (middle) and 0% (low), and clean manufacturing was 53.1% (high), 40.6% (middle) and 6.3% (low) respectively.

Findings from each of the three projects recommended providing greater incentives to firms that implement environmental management systems. One incentive may be to exempt a company from routine environmental audits if it has passed ISO 14001 certification and can demonstrate adherence to its EMS. Other incentives include preferential financial or insurance rates for qualified companies, or promoting green purchasing policies based on ISO 14001 certification.

In view of these recommendations, the EPA will further research the feasibility of using such incentives. In terms of tracking and checking work, compulsory screening will be replaced by an open system whereby companies choose to participate on their own initiative. To generate cooperation for EMS and environmental administrative work at the local level, ISO 14000 related EMS training for local environmental administrative and auditing personnel will be expanded and participation of local departments in carrying out tracking and checking work will be strengthened.

News Briefs

EIA of Former RCA Site to Include Health Risk Assessment

A list of individuals who have contracted cancer from the RCA soil pollution incident in Taoyuan County was recently released by a local environmental group, seizing media and public attention. EPA Administrator Tsai Hsung-hsiung indicated that pollution remediation review is underway and that health risk assessments will be added to EIA requirements for future land development projects.

Taiwan Heads up APEC Marine Resource Conservation Working Group

EPA Water Quality Protection Bureau Director General Gwo-dong Roam lead a delegation from Taiwan to attend the 11th APEC Marine Resource Conservation (MRC) Working Group meeting, at which time Taiwan was appointed “lead shepherd.” As this year has been named the “International Year of the Sea,” events on the subject of marine affairs should be particularly common across the globe. Taiwan has already established an MRC Working Group Secretariat whose primary communications and administrative work will be taken on by the EPA's Office of Science and Technology Advisors.

EPA Announces “Responsible Toxics Use Award” Regulations

In October, the EPA formally announced the *Toxic Chemical Substances Responsible Use Award Regulations*. In the future, toxic substance users or responsible parties that do not violate the *Toxic Chemical Substances Control Act* over a ten year period, make outstanding efforts toward prevention and equipment improvement effectiveness or develop ways to reduce risks arising from toxic substance use are eligible for awards. Candidates will be selected by local-level authorities and awards will be presented by the EPA.

Articles in the Public Dispute Settlement Act Enforcement Rules to be Amended

Draft amendments to articles in the enforcement guidelines portion of the Act have already been readied. The articles clearly stipulate that after receiving an application for arbitration, the Arbitration Committee must set a date for arbitration within one month, generate a notification document and send the document to involved parties.

1999 Waste Electric Appliance Recycling Fee Rates Formally Announced

On June 15, 1998, a meeting of the Electronic Appliance Resource Recycling Fund Management Committee set recycling incentive rebates and collection and storage fee rates for waste televisions, washing machines, refrigerators, and air conditioners and space heaters (see table).

Waste appliance and IT product recycling, collection and processing fee rates		
Company type	Waste item	Recycling, collection & processing fee rates (3/1/98 ~ 12/31/98), in NT dollars per unit
Electric appliance vendor	TV	150
Electric appliance importer	Refrigerator	220
	Washing machine	154
	Air conditioner and space heater	170
IT product vendor	Notebook PC	220
IT product importer	Motherboard	75
	HDD	75
	Power source	12.5
	Housing	12.5
	Monitor	125

Air Pollution Permitting Regulations to be Streamlined

The EPA is preparing to amend current air pollution permitting regulations that will loosen air permitting requirements in 10 manufacturing processes. Once the scope of the regulations has been evaluated, the EPA will then re-evaluate certification and permitting requirements for specialized environment personnel.