

# Environmental Policy Monthly

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#### Feature Article

### ***Feature Article: Industrial Waste Control Center Plan Moves Forward***

**In 1996, an industrial waste management center was established and in August of this year, an industrial waste online reporting system (ORS) was implemented and waste disposal vehicles were fitted with global positioning systems (GPS). It is estimated that in 1999, 85% of all industrial waste and 100% of hazardous waste will be managed. In terms of disposal facilities, plans call for the installation of three to five storage centers and final disposal sites. The EPA is also moving to amend the *Waste Disposal Act and Industrial Waste Storage, Collection and Treatment Methods and Facilities Standards*.**

Generation of industrial waste has coincided with the growth of Taiwan's economy, and despite controls and enforcement carried out by the government over the years, the problem of illegal disposal still persists. To address inadequacies in current controls, the EPA in 1996 implemented the *Industrial Waste Control Center Installation Plan* and began to reform the entire management process from industrial waste information, collection and treatment (hereafter referred to as "disposal") and transport auditing to final treatment.

The *Plan* aims to establish a fast and comprehensive industrial waste information system that can provide information on the type, quantity and transport of waste material in manufacturing sites and the activities of waste disposal companies. It will also implement an intensified auditing plan and assist with planning temporary and final disposal sites.

The first step in the *Plan* is to establish an online reporting system (ORS) that provides timely, complete and accurate information. Under this system, a company (or institution) planning to remove waste from its site must be ready at any given time to report basic information to the management center and wait for a response in the form of a manifest. This basic information includes waste material type and quantity, waste disposal company name, disposal method used and collection and time of removal. Once a manifest confirming the accuracy of the reported information is received, it is passed to the waste disposal company which, with the manifest in hand, is then authorized to remove the waste material from the site.

Providing timely information on industrial waste transport both increases local auditing mobility and efficiency and affords a high degree of supervision. Once the computer center has been set up and related data accumulated, the management center will be able to establish a preliminary waste material quantity forecasting model based on stored data for a given industry. It will also be able to inspect reported information more quickly, and collusion between firms and waste disposal companies to make false reports will become more risky.

The ORS began a trial run in January with the transport of hazardous and infectious waste of major state-owned and private enterprises and over 100 major medical treatment institutions respectively, targeted by the management center. Following two rounds of improvements during this period, the EPA on August 1 announced the first round of targets for ORS implementation including Chinese Petroleum Corp. (CPC), China Shipbuilding Corp., Taiwan Fertilizer Co. Ltd., Taiwan Power Co., Taiwan Sugar Corp., Taiwan Machinery Manufacturing Corp., Taiwan Salt Industrial Corp., Aerospace Industrial Development Corp. (AIDC), Taiwan Monopoly Bureau (TMB) and China Steel. Under these ten state-owned companies are over 80 sites. The second round of targets is to be announced on October 1 and will include 1,000 manufacturers, all medical treatment institutions with more than 50 beds and waste disposal companies contracted by the above mentioned companies.

The management center is continuing to focus on implementation of controls primarily on hazardous waste sources and major waste generation sources. It is estimated that in 1999, all hazardous waste and 85% of industrial waste will come under management. Future plans call for daily reporting of waste quantities produced rather than for reporting the amounts leaving a given site.

Apart from the ORS, the management center is aggressively promoting GPS (Global Positioning System) technology to thwart the efforts of some waste disposal companies to illegally dispose of waste material. In the first stage of implementation, the management center will require that waste disposal vehicles be equipped with GPS to monitor waste material transport on a timely basis. Monitored information will include time of transport, route taken and position on the route. GPS will also provide emergency treatment and response information to reduce accidents.

Once the operating system is in place, the management center will contract industrial pollution management technology service teams to help firms implement the new systems and with industrial waste treatment. The assistance is to include industrial waste quantity investigation, treatment process tracking and treatment status auditing. It will also include assisting firms to properly store and treat industrial waste material. Firms targeted for ORS implementation were also targeted as the first round to receive assistance, which began in August. In January of next year, after assistance work has been completed, the management center will fully implement industrial waste auditing.

Industrial waste management problems in Taiwan arise from a host of factors. In addition to inadequacies in the current management system and a low level of legal compliance, more serious factors include an inadequate waste treatment capacity of permitted and qualified waste disposal companies and a shortage of qualified final waste disposal sites.

To overcome these difficulties while not effecting environmental quality, the management center is preparing to accelerate the permitting process to ensure that there are enough qualified waste disposal companies to meet current disposal quantity demand.

While the management center is installing final disposal sites, it will also build urgently needed temporary hazardous waste storage sites. Plans currently call for installation of three to five industrial waste storage centers and final disposal sites in Northern, Central and Southern Taiwan.

In terms of amending the relevant regulations, modifications allowing the cooperative establishment of disposal facilities by firms and stipulations regarding ORS and GPS technology have been incorporated into the draft amendment to the *Waste Disposal Act*. The *Industrial Waste Storage and Disposal Methods and Facilities Standards* and *Industrial Waste Storage and Disposal Methods Online Work Guidelines* and related enforcement rules are currently being amended or formulated.

## ***A Look Inside the EPA: The Bureau of Solid Waste Management***

According to the *Environmental Protection Administration Organization Statutes*, the EPA's Bureau of Solid Waste Management is primarily responsible for managing waste and drafting soil contamination control policies and regulations; plotting, guiding and overseeing industrial waste and soil contamination controls; and other items related to waste management and soil contamination control.

In terms of organizational structure, the Bureau has a General Director, Deputy General Director and three higher-level staff members. Reporting to them are six Divisions and the Recycling Fund Management Committee (hereafter referred to as the Fund Management Committee). The following are the duties of the each Division and the Fund Management Committee.

Division I is responsible for drafting, implementing, overseeing, carrying out and assessing quantity reduction and resource recycling policies, projects and plans; implementing general waste recycling equipment plans, general waste quantity reduction recycling technology development, general waste sorting facilities installation; and all other activities related to general waste reduction and resource recycling.

Division II is responsible for drafting, implementing, overseeing, carrying out and assessing general waste management policies, projects, plans and regulations; planning and installing general waste treatment sites and approval of related plans; and planning the privatization of general waste disposal (includes collection and treatment) facilities. Other responsibilities include planning and approving environmental cleanup personnel safety and employment benefits, and other general waste management activities.

Division III is responsible for general waste project management mainly involving general waste landfill and incinerator related activities; issuing proof of use certificates that permit duty-free importing of general waste disposal equipment by non-manufacturing institutions and organizations; and carrying out other specified general waste management projects.

Division IV is responsible for (general and hazardous) industrial waste related activities such as investigation of industrial waste and collection of related information, drafting of regulations, and drafting, implementing, overseeing, carrying out and assessing of policies, projects and plans; implementing waste reductions; managing and assisting public and private waste disposal companies; implementing industrial waste treatment site installation plans; issuing proof of use certificates that permit duty-free importing of industrial waste disposal equipment by non-manufacturing institutions and organizations; and managing and handling other items related to industrial waste management.

Division V is responsible for issuing hazardous waste import, export, cross-boundary and transshipment permits.

Division VI is responsible for items related to soil contamination control. The latter includes investigation of soil contamination; recycling, management and study of related information; drafting, implementing, overseeing, carrying out and assessing soil contamination control regulations, control policies, projects and plans; reporting, planning soil contamination control and improvement work, and other items related to soil contamination control.

The organizational structure of the Fund Management Committee is divided along functional lines into six groups (see “Initial Structure of Publicly Operated Recycling Fund Confirmed” in EPM Volume I, Issue 12). Groups 1~3 are in charge of comprehensive planning, auditing, and general waste and container recycling respectively. Groups 4~6 are responsible for other articles such as abandoned motor vehicle and waste tire, lubricant, alkaline battery, electric appliance and information product (recycling, collection and treatment).

## ***BOT/BOO Incinerator Construction Plan Actively Promoted***

**A plan to promote the construction of BOT/BOO incinerators calls for 15 plants to be built with a total capacity of 8,500 metric tons per day. In line with the Executive Yuan’s domestic stimulus package, a contract to build one plant has been awarded and invitations to bid on two more have already been publicly announced. Preparations to announce bid invitations for the remaining plants are currently underway.**

To address the mounting problem of trash disposal in Taiwan, the EPA drafted the *State-owned and Private Enterprise Waste Incinerator Construction and Operation Incentive Implementation Plan* to accelerate the construction of refuse incinerators. The Plan calls for the construction of 15 incinerators in two rounds that will yield a total refuse processing capacity of 8,500 metric tons per day. The following paragraphs detail the incinerator sites, scale and implementation timetable.

The Plan adopts the build-operate-transfer (BOT) and build-operate-own (BOO) models to encourage state-owned and private companies to build refuse incinerators. The sponsoring municipal/county authority will supply a guaranteed quantity of trash for processing, sign a 20 year service contract, and according to the actual quantity of material processed, pay a tipping fee to the firm. The firm is responsible for construction and operation of the incinerator (must comply with the installation scope and obtain an operation permit).

As part of the trial-run phase of the Plan, an initial bid selection process was conducted for a proposed incinerator in Taoyuan County that considered offers tendered by six qualified local and foreign bidding teams. Of these, Evergreen Heavy Industrial Corp. was awarded the contract on August 12. The success of this process affirmed the structure, implementation strategy and measures of the Plan, paving the way for bid selection of the remaining incinerators to move forward.

### *Incinerator site, scale and implementation progress*

<i>No.</i>	<i>Proposed site</i>	<i>Model</i>	<i>Capacity (mtons/day)</i>	<i>Progress details</i>
<b>Round I phase</b>				
1	Taoyuan County, Southern District	BOO	120	Evergreen Heavy Industrial Corp. awarded contract on August 12.
2	Hsinchu County	BOO	300	Consultant selected.
3	Miaoli County, Chunan Town	BOT	500	Bidding documentation being readied and scheduled for announcement in August.
4	Taichung County, Wuri Village	BOT	600	Bidding documentation being developed and scheduled for announcement in November.
5	Nantou County	BOO	500	Bid selection procedures scheduled for announcement on August 17.
6	Changhwa County	BOO	800	Bidding documentation being developed and scheduled for announcement in November.
7	Yunlin County	BOO	300	Bidding documentation completed. To be carried out in Round II.
8	Taitung County	BOO	300	Bidding procedures publicly announced on July 23.
<b>Subtotal</b>			<b>4500</b>	
<b>Round II phase</b>				
1	Taipei County, Hsichih Town	BOT	300	Performing EIA.
2	Taoyuan County, Northern District	BOO	800	Waste disposal company contract approved.
3	Taichung City	BOO	600	Waste disposal company contract approved.
4	Taichung County, Ta'an Village	BOT	500	Waste disposal company contract being developed.
5	Yunlin County	BOO	300	Joint trial run being executed.
6	Tainan County, Chiku Village	BOT	900	Performing EIA.
7	Hualien County	BOT	400	Waste disposal company contract sent for approval.
8	Penghu County, Huhsi Village	BOT	200	Waste disposal company contract being developed.
<b>Subtotal</b>			<b>4000</b>	
<b>Total</b>			<b>8500</b>	

## ***EPA to Help Large State-owned Companies Improve Industrial Waste Disposal***

**Following the formal announcement that 10 state-owned companies must report industrial waste via an online reporting system (ORS), the EPA continued to implement a plan that assists these firms with industrial waste disposal. The next step is for information on waste reduction, reuse, storage and disposal technology assistance in the production process to be checked on-site and evaluated.**

On August 1, the EPA began to implement use of an online reporting system (ORS) to report industrial waste. Ten state-owned and private companies including the Chinese Petroleum Corp. (CPC) were targeted and publicly announced for compulsory ORS implementation. The ORS uses high-speed monitoring and management technology to continuously track industrial waste type, quantity and disposal location. The ORS will also be used to establish a database as a reference for follow-up auditing and

management. This represents just the first step in strengthening industrial waste management.

Recently, the EPA, Industrial Development Bureau (IDB) and Commission of National Corporations commissioned industrial pollution management technology service teams to study and assist the industrial waste disposal work of the more than 80 plants comprised by the ten firms. The enforcement of post-reporting measures is another link in the strengthening of management work that will be further readied in the days to come.

The Plan calls for the teams to investigate and evaluate the companies' industrial waste quantity and disposal location tracking and auditing efforts. The teams must also assist them with proper storage and disposal. The following are the two objectives of the assistance plan:

1. The ten firms currently generate 7.54 million tons of industrial waste annually or 41% of total industrial waste of which 42,000 tons are hazardous. This waste material is currently handled through reuse (53.1%), on-site treatment (11.3%), waste disposal company (27.7%) and on-site storage (8%). CPC and Taiwan Power currently account for 32.53% and 37.64% of on-site stored waste respectively that is awaiting proper treatment.
2. The assistance work currently being carried out aims to raise the proportion of properly treated industrial waste. Experience gained can later serve as a reference when compulsory ORS implementation is extended to other enterprises.

The assistance plan also calls for the teams to conduct on-site checks and evaluate the suitability of industrial waste disposal methods used, develop an improvement plan and assist with its implementation. The teams will then provide the firm with production process related waste reduction, reuse, storage and disposal related technology assistance according to its needs.

The timeframe for the assistance work calls for the teams to conduct on-site checking, evaluation and assistance from August to October. This work will be expanded from October to December to include waste disposal companies. From January to April of next year, the auditing system will be fully implemented as part of the next stage of industrial waste management.

## ***Industrial Waste Controls to be Significantly Tightened***

**A draft amendment to the *Waste Disposal Act* added the principles of “waste life-span liability” and burden of proof to industrial waste controls. The draft also added strict penalties and several criminal responsibilities. As trash disposal fee rates are to be set at the local level, the structure of trash disposal costs and proportion of these costs reflected in the fee rates each year was also added to the draft.**

On August 28, the EPA called administrative agencies together to engage in discussions on a draft amendment to the *Waste Disposal Act*. In response to the implementation of decision-making at the local level, the draft aims to resolve the dispute between local and central government authorities over trash collection methods and fee rates and to strengthen the legal basis of industrial waste controls. To ensure that the legislative process would proceed smoothly, special revisions to the Act were held to ten critical articles.

In terms of the dispute between local and central government authorities over trash disposal fee rates, the draft stipulates that these fee rates are to be set at the local level. To avoid further debate, the structure of trash disposal costs and proportion of these costs reflected in the fee rates each year were added to the draft. In addition, local governments will be required to establish a special fund specifically for trash disposal fees. If administrative authorities collect fees in violation of the law, they will not be eligible for facility and equipment upgrading fund subsidies from the EPA.

In terms of industrial waste controls, the principles of “waste life-span liability” and burden of proof were added to the draft. If industrial waste generated by a firm cannot be properly collected, treated or reused, regardless of whether the firm had retained a qualified waste disposal company to handle the waste material, the firm is ultimately liable for disposal, pollution collection improvement and fee burden.

The draft also strengthens controls on the reporting, tracking and improvement (made within a limited period of time) of industrial waste. Of these, stipulations on the use of an industrial waste online reporting system (ORS) and global positioning systems (GPS) were added to the draft.

The draft also added the principle of burden of proof. If information reported by a firm is determined by the competent authority to be false in type or quantity of industrial waste, the firm must furnish evidence required by the authority that proves contrary, otherwise the waste material will be considered as improperly treated.

The EPA also revised related articles to accommodate controls on the import/export, cross-boundary transport and transshipment of waste material as part of the *Basel Convention*. As there are numerous controlled items listed in the *Basel Convention* and by the OECD that are not considered hazardous waste substances in Taiwan, the new articles will add trans-boundary movement control mechanisms to general industrial waste substances. Their scope and regulatory controls will be set separately.

A unique aspect of the draft is the addition of several penalties and criminal responsibilities were also added to serve as a deterrent. According to the draft, industrial waste that is improperly treated or reused resulting in death, personal injury or risk to human health that causes sickness is punishable with imprisonment of seven years to life, three to ten years, and less than three years respectively. In terms of trash disposal fee payment, articles were added to give fines a legal basis.

Although discussion participants cited insufficient enforcement personnel as administrative authorities’ biggest problem, making laws more strict is not the answer. The addition of criminal responsibility, however, is the right approach as it serves as a deterrent and allows for judicial personnel resources to support environmental enforcement.

As there were few points of contention during the discussions, the EPA will complete the details of the revisions and submit the draft to the Executive Yuan as soon as possible.

## ***NCSD Implements National Energy Conference Resolutions***

**The National Council for Sustainable Development (NCSD) recently commissioned the development of energy output standards or efficiency indicators for each industry as a**



**reference for environmental impact assessment (EIA) of new facilities to be built by energy-intensive industries. Energy efficiency standards for home appliances will also be implemented. As the EPA in Taiwan and the U.S. enter their second year of cooperation on the *Energy Star Plan*, local application of energy technology will be emphasized. Two potential projects were also developed to raise funds for the NT\$10 billion energy savings plan.**

To ascertain the progress of administrative agencies in implementing resolutions made at the National Energy Conference, held in May of this year, and to coordinate related work, the Atmosphere Protection and Energy Taskforce under the National Council for Sustainable Development (NCSA) on August 25 held the first working meeting of FY 1999 with administrative agency representatives.

Regarding discussion on energy output, it was decided that to establish environmental impact assessments (EIA) systems for evaluating and permitting construction of new plants by energy-intensive industries, National Energy Council resolutions should be followed that call for the development of energy output standards or efficiency indicators for each industry to be stepped up.

Regarding home appliance energy efficiency standards, the National Energy Conference advocated that compulsory standards be set for energy-intensive appliances and products failing to meet the standards would not be approved for sale. In line with the *Energy Star Plan*, the EPA suggested that an office and home appliance energy labeling system be established as an incentive to promote energy efficiency.

The *Energy Star Plan* is a voluntary program aimed at reducing greenhouse gas emissions through saving energy. The U.S. EPA started the program in 1992. Two measures were used to implement the plan. Businesses, manufacturers, households and design/construction authorities were encouraged to use energy-efficient products. Manufacturers of these products were encouraged to adopt the *Energy Star Plan* labeling system. Apart from the U.S., Japan is also actively promoting this plan

As the R.O.C and U.S. EPAs enter their second year of cooperation on the *Energy Star Plan*, on-site testing of some energy technologies will begin. A plan to survey the energy efficiency of interior illumination in Taiwan was undertaken last year by Taiwan and the U.S. will be added to the *Green Architecture Plan* implemented by the Ministry of the Interior's (MOI) Institute of Architecture as a reference for the overall design scope of a structure.

In addition, the National Energy Conference passed a resolution urging the government to raise NT\$10 billion in funds over the next five years to promote energy savings, raise energy efficiency, and research, develop and promote clean energy. Based on current laws and use of an energy fund, these funds could be raised over a five year period if Chinese Petroleum Corporation (CPC) and Taiwan Power each contribute 0.05% of their annual earnings. However, the pace of privatization of these public firms could render such a plan unfeasible. The National Energy Council will consider a sort of energy tax whereby funds would be collected from fuel providers.

## ***Central Area Air Quality Improvement Plan Implemented***

**On August 25, the *Central Area Air Quality Improvement Plan* was formally implemented. The Plan calls for all pollutants to be reduced by 3%. Taskforces will plan and coordinate pollution control measures in Taichung City/County, Changhua County and Nantou**

**County. These include implementation of 13 pollutant reduction plans that strengthen air pollution emissions volume controls on the 20 largest factories, large construction sites, exposed earth, gravel pits, motorcycles and cars, diesel vehicles and old buses.**

Of the seven air quality areas in Taiwan, the Kao-Ping Air Quality Area (hereafter referred to as the “Kao-Ping Area”) and Central Air Quality Area (hereafter referred to as the “Central Area”) are ranked as having the first and second most severe air quality and thus were targeted for priority implementation of total pollution quantity controls. Following the establishment of the Kao-Ping Area coordination office last year, the *Central Area Air Quality Improvement Plan* was implemented on August 25 of this year.

The Central Area comprises Taichung City/County, Changhua County and Nantou County. The total number of people, vehicles and factories in the Central Area is second to that in the Northern Area however pollutants in the former account for about one-fifth of total pollutants in Taiwan. The proportion of days with poor air quality (PSI>100) averages 5.09% annually, second only to the Kao-Ping Area at 14%.

The Plan calls for the proportion of days with poor air quality to be reduced to less than 4.5% and all pollutants to be reduced by 3% this year. In order to achieve these reductions, particulate matter must be reduced by 2,800 metric tons, nitrogen oxides (NO<sub>x</sub>) by 2,090 metric tons, sulfur oxides (SO<sub>x</sub>) by 3,350 metric tons and non-methane hydrocarbons by 2,860 metric tons.

Although local environmental authorities spent funds levied beginning in July 1995 on numerous pollution controls, Central Area air quality has improved considerably. However, to achieve a proportion of days with poor air quality of 3% in 2001 and 2% in 2006 as set fourth in the *National Environmental Protection Plan*, stronger efforts were needed. Studies indicate that pollutants from sources in Taichung City/County, Changhua County and Nantou County often move between city/county. Success in improving air quality can only be achieved through a joint effort that simultaneously implements pollution controls and volume reductions in each city/county.

The first step in this joint effort is the implementation of total pollution quantity controls in the Central Area. The EPA will coordinate the personnel of central and provincial environmental authorities, environmental centers and city/county environmental bureaus. These staff will form a Central Area Pollution Reduction Taskforce that will have three working groups. These working groups will have jurisdiction over stationary pollution source control, fugitive pollution source control and non-stationary pollution source control respectively. Each working group will hold review sessions on a regular basis, search for pollution sources that effect Central Area air quality and work with city/county authorities to strengthen pollution reduction volume and control work at these sources. In addition, implementation of auditing control efforts in each city/county will adopt integrated auditing (includes air pollution permitting, evaluation and testing) of pollution sources listed as being under control.

Targeted substances for testing air quality in the Central Area are particulate matter (PM10) and ozone (O<sub>3</sub>). Sources of the former originate from road dust, secondary aerosol, agricultural waste burning and brick and ceramic manufacture while precursors of the latter come from NO<sub>x</sub>, non-methane hydrocarbons (mostly from large petrochemical plants), electricity generation plants and PU synthetic leather manufacture. Non-stationary pollution sources are also the primary contributors to Central Area air pollution.

In view of pollution characteristics in the Central Area, the Taskforce developed the following 13 pollution reduction plans: Checking that diesel in fuel storage tanks and vehicles at gas stations contains less than 0.15% sulfur; developing and announcing a plan to implement use of fuel that contains less than 0.5% sulfur in Changhua and Nantou Counties; continuing to implement stationary pollution source assistance and improvements; evaluation and auditing controls; providing volume reductions, assistance, and developing strict control standards for brick and ceramics, paper and glass industries; overseeing implementation of volume reductions at a coal-fired power generation plant in Taichung; and coordinating the emissions volume of the 20 largest firms including Taiwan power, steam and electricity co-generation facilities and industrial boilers which account for 78% of total Central Area emissions. In addition, from September of this year to March of next year, when air quality is at its worst, the taskforce will work with the 20 companies to make adjustments, conduct routine maintenance and help them shift to use of natural gas.

In addition, the EPA will also set regulatory controls on construction project and fugitive particulate matter pollution sources and tighten emission standards on electricity generation facilities and industrial boilers.

These total quantity control measures reflect the spirit of the draft amendment to the *Air Pollution Control Act* and the recently established *Central Area Air Quality Improvement Plan* and will help to strengthen the foundation of the total control system.

## ***EPA Boosts Efforts to Phase Out Older High Polluting Motor Vehicles***

**Although second-stage emission standards have been in place for years, many cars and motorcycles on the road today meet only stage one standards. In response, the EPA plans to significantly raise the vehicle upgrade subsidy to entice more owners to upgrade older high polluting motorcycles. Subsidies would be raised to between NT\$2,000 and NT\$3,000 with air pollution funds, discarded motor vehicle collection funds and motor vehicle manufacturers/importers sharing in the costs. In addition, regular tests on motorcycles will be strengthened, diesel vehicles tested and gas vehicles remotely monitored.**

On March 1998, there were a total of 15 million motor vehicles in Taiwan of which motorcycles accounted for two-thirds, the principle source of air pollution in Taiwan's urban areas. In response to severe environmental loading, Taiwan began in the 1990s to adopt the world's strictest vehicle emission controls that include the announcement of first- through fourth-stage-standards. However, as vehicles built prior to second-stage-standards meet only first-stage-standards and since second-stage-standards did not provide for the elimination of first-stage-standard vehicles, it is not surprising that the effectiveness of air improvement efforts has been severely impaired.

According to current data, the proportion of first- and second-stage-standard vehicles is as follows:

1. Gas vehicles (cars and trucks): Second-stage-standards were implemented on July 1, 1990. At the end of 1995, the proportion of first- to second-stage-standard vehicles

was 61:39. In March, 1998, there were a total of 4.82 million gas vehicles in Taiwan of which first-stage-standard cars accounted for 14% or 660,000 vehicles. It is estimated that by 2000, with the suspension in use of leaded gasoline, the number of first-stage-standard vehicles will sharply decline.

2. Diesel vehicles (cars and trucks): Second-stage-standards were implemented on July 1, 1993. At the end of 1995, the proportion of first to second-stage-standard vehicles was 60.8:39.2. In March 1998, there were a total of 511,000 diesel vehicles in Taiwan of which first-stage-standard vehicles accounted for 33.3% or 170,000 vehicles.

3. Motorcycles: Second-stage-standards were implemented on July 1, 1990 while third-stage-standards were implemented in January, 1998. At the end of 1995, the proportion of first- to second-stage-standard motorcycles was 59:41. In March 1998, there were about 10 million motorcycles in Taiwan of which first- through third-stage standard motorcycles accounted for 3 million (30%), 6.7 million (66%) and 420,000 (4%) motorcycles respectively.

As the proportion of first-stage-standard vehicles is still high, the EPA on August 31 decided to develop a plan to encourage owners to upgrade older high polluting vehicles.

The plan calls for the “vehicle upgrade subsidy” to be significantly raised to entice more owners to upgrade older motorcycles. According to the plan, subsidy funds would be raised from NT\$400 to between NT\$2,000 and NT\$3,000 per vehicle with air pollution funds, discarded motor vehicle collection funds and motorcycle manufacturers/importers sharing in the costs.

Apart from intensifying motorcycle emissions checks, the EPA also plans in January of 1999 to conduct regular tests on diesel vehicles and local environmental authorities will conduct strict tests and levy heavy fines to hasten the elimination of older high polluting vehicles.

Another focus of the plan is the use of remote sensing technology to pinpoint vehicles with excessive emissions. Information gathered using this method could serve as a reference for pinpointing and investigating high polluting models for recall. As of June, the EPA had already conducted 1.8 million remote tests of which about 10% were found to have excessive emissions and were subsequently notified to have their vehicles serviced and tested. Remote testing work will be conducted at three locations this year and future expansion plans will depend on the results of this work. Vehicles that spew thick streams of black smoke or “diesel inkfish” will find it particularly hard to evade such modern controls. The broad regulatory approach of this plan bodes well for the elimination of many older high polluting vehicles.

## *Natural Gas Filling Station Promotion Efforts to Be Stepped Up*

**Following the considerable efforts made by the EPA Administrator, a breakthrough was made with the Executive Yuan Premier to step up efforts to promote the installation of natural gas filling stations. Under the instruction of the MOEA, the Chinese Petroleum Corporation (CPC) is to install mobile natural gas filling stations to meet demand in the short-term. In addition, the MOEA is to relax regulations on the installation of filling**

**stations that combine gasoline and natural gas service as well as to loosen regulations on the safe distance for installation of fuel storage tanks. Taxi services are to install their own natural gas filling equipment. In addition, the MOEA will review filling station safety standards and a filling station subsidy increase to NT\$7 million.**

Since the first natural gas filling station was installed in July 1995, signaling the debut of natural gas cars in Taiwan, there was a fleeting period when commercialization efforts made real progress. However, as widespread installation of filling stations did not follow suit, subsequent efforts to commercialize these alternative fuel vehicles ultimately ran out of (natural) gas, leaving related firms and policy initiatives in a jam.

To encourage taxis to switch over to natural gas, the EPA in December 1995, introduced a subsidization policy (see Table) that offered NT\$25,000 for junking a gasoline car in favor of a new natural gas one. It also offered NT\$20,000 to NT\$25,000 for converting a car from gasoline to natural gas. Under these incentives, the number of natural gas cars grew by 11,105 units in FY 1997 and 9,314 units in FY 1998. Ironically, as the number of natural gas cars began to grow, the number of natural gas filling stations plummeted.

In terms of organizational structure, the initiative to commercialize natural gas cars in Taiwan is the responsibility of the following Executive Yuan administrative agencies: MOEA's Energy Commission in charge of filling station installation and management, promotion and special project work; Council of Labor Affairs (CLA) in charge of station facilities and labor safety investigation and examination; Ministry of the Interior's (MOI) National Fire Administration in charge of fire safety approval; EPA in charge of emissions control and promotion; MOEA's Industrial Development Bureau (IDB) in charge of conversion company approval. In addition to increasing the conversion subsidy by a considerable margin, the EPA will also coordinate with related administrative agencies to promote the installation of natural gas filling stations.

As natural gas filling station management requires the joint efforts of many administrative agencies, and given the number and complexity of related regulations and the difficulty of obtaining land, no filling stations have been built apart from three pilot stations installed by Chinese Petroleum Corporation (CPC) in Taipei, Taichung and Kaohsiung. Based on the pace of current efforts, this number is not likely to increase in the next six months. The inconvenience of finding a filling station when you need one has dampened the willingness of taxis to switch over to natural gas. At present, the rate of conversion to natural gas has fallen to about 200 to 300 vehicles per month and the number of conversion companies has steadily fallen from 23 initially to about four or five now. On September 11, some conversion company owners and taxi drivers planned to stage a protest outside the Legislative Yuan and present a petition of the losses they were suffering.

Faced with the acute shortage of filling stations, EPA Administrator Tsai Hsung-Hsiung recently submitted a report to the Executive Yuan on how to respond to natural gas policy problems that severely criticizes administrative agencies for their lack of support. The Administrator also submitted the following recommendations regarding the installation of natural gas filling stations:

1. Study related experiences in the U.S. and Japan. Amend the relevant regulations to implement installation of scaled-down filling stations. Promote installation of the stations;

2. Study related experiences in the U.S. and Japan. Implement mobile filling stations;
3. Relax regulations governing the installation of filling stations that combine gasoline and natural gas service;
4. Amend the relevant regulations to allow taxi services to install natural gas filling facilities for their exclusive use in line with the precedent set by trucking companies.

Following the considerable efforts made by the EPA Administrator, Premier Vincent Siew issued a clear directive requiring that the MOEA do its utmost to implement the installation of filling stations, a momentous breakthrough after much hardship. In response, the MOEA developed a resolution in consultation with the relevant administrative agencies. The Energy Commission is to amend the *Liquefied Petroleum Gas (LPG) Car Filling Station Installation Management Regulations* to allow taxi services to install natural gas filling facilities for their exclusive use. In addition, after studying related laws in the Netherlands, it was decided that the required distance between gasoline and natural gas filling and storage facilities at filling stations that offer both fuels will be reduced from 10 meters to 5 meters. The Energy Commission will also draft the *Mobile Filling Station Installation Provisional Regulations*.

Submitted on September 4, the draft *Mobile Filling Station Installation Provisional Regulations* charge CPC with the job of installing the mobile stations. The installation sites are to be proposed by municipalities or by city/county governments and selected from broad plots of undeveloped state-owned land or from existing CPC-owned filling stations or land. A sunset clause that abolishes the provisional guidelines at the end of June 1999 will also be included in the draft. In addition, the Energy Commission will examine to what degree the conditions for installing filling stations should be relaxed.

In terms of filling station installation subsidies, the subsidy originally set by the EPA is to be abolished at the end of June 1999. In the FY 2000 budget, the Energy Commission will allot a maximum subsidy of NT\$7 million for the installation of each filling station. As the business community may adopt a wait-and-see attitude based on this scenario, the EPA is considering increasing the current subsidy of NT\$4.5 million to NT\$7 million and extending its period of effectiveness from December to June 30 of next year.

## ***EPA to Help Factories Achieve Wastewater Color Standards***

**It is estimated that 10% to 15% of dyeing and finishing factories cannot comply with wastewater *Color Standards* under the *Effluent Standards* formally announced in July. The EPA will assist firms with making improvements or with importing treatment technology and import advanced treatment techniques under the *R.O.C.-Canada Cooperation Plan*.**

In 1986, controls on wastewater transparency (using a transparency value of greater than 15cm) were implemented as part of the *Effluent Standards*. In March 1997, the transparency controls were abolished as numerous disputes arose during the course of enforcement over the imprecise nature of measuring transparency with the naked eye. In December 1997, *Color Standards* were proposed as a more feasible approach to

satisfying public concern over the obviously poor visual appearance of some wastewater. These color standards went into effect on July 1 of this year.

According to dyeing and finishing, textiles, and paper and pulp firms, wastewater color pollution (the unnatural physical appearance of some wastewater) is extremely obvious. After studying the wastewater color standards of various Asian neighbors and in considering the regulatory burden acceptable to industry, the EPA set color standards at 400 units (using the American Dye Manufacturers Institute testing method). Compared with mainland China, Singapore, Hong Kong and South Korea, this maximum control limit is second only in severity to that used in mainland China.

To determine the state of “color pollution” among dyeing and finishing factories, the EPA surveyed the pollution treatment, textiles, paper pulp and leather industries which have the most severe “color pollution” problem. According to the results, the rate of compliance among firms in these industries was 88.6%, 92.3%, 100% and 100% respectively. An independent academic study commissioned by the EPA yielded similar results. From these results, it is estimated that 85% of dyeing and finishing factories can comply with the color standards.

There are currently more than 300 dyeing and finishing factories in Taiwan. Regarding the 10% to 15% of firms that cannot comply with the standards, the EPA will help them make improvements. The EPA plans in this fiscal year to assist ten firms in Southern Taiwan with their treatment process or with helping them improve their wastewater treatment facilities. In terms of firms whose process or facilities still cannot comply with the color standards following improvement assistance, the EPA will import cost-effective wastewater treatment technology such as high level oxidization or active carbon absorption technology. The installation cost of these pollution removal technologies is estimated to be in the U.S. dollar five-digit range.

On September 23, the EPA and Canada held the *R.O.C.-Canada International Symposium on Wastewater Pollution Treatment Technology in the Dyeing and Finishing Industry*. Its objective was to help factories in Taiwan meet wastewater color standards through improvements to their industrial and wastewater treatment technology.

In terms of inspection methods, the Dyeing and Finishing Industry Association indicated its preference for the method that uses 31 wavelengths over the one that uses three wavelengths as the former is more sensitive in some wavelengths, favoring the firm being inspected. According to reports, both methods have been recognized as legal in the U.S. since 1996. The EPA plans to study the inspection results of these methods in more depth.

## ***Government Budgets to Be Coordinated with Sustainable Development Work***

**To integrate administrative agency budget allotments into sustainable development work, the EPA will compile National Council for Sustainable Development (NCSD) work group, use and budget classification information submitted from authorities. This work is to proceed until January of next year.**

Since its inception in September 1997, the National Council for Sustainable Development (NCSD) has been working to integrate related national resources and

formulate and implement comprehensive national strategies for sustainable development and environmental protection. The NCSD is composed of eight workgroups with the EPA serving as administrative secretary.

During its preparation of the FY 1999 budget, the EPA allotted only a few million NT dollars for NCSD operating expenses. After reviewing the FY 1999 budget, the Legislative Yuan (LY) indicated through an additional resolution that sustainable development related research and work efforts of other administrative agencies have focused mainly on their core work. The resolution concluded that these other agencies have not done their best to advance sustainable development. As a result, the LY requested that the NCSD improve its budget allotment methods.

In response to the resolution, the EPA is currently developing an operational model for FY 2000 budget allotment that integrates and lists all related work of agencies. Budgets prepared using this model will be able to show the efforts of each authority and the nation as a whole toward sustainable development.

Following the third meeting of the NCSD in May, the Secretariat of the NCSD (located in the EPA's Office of Science and Technology Advisors) compiled a list of initiatives submitted from each work group for implementation under the FY 1999 budget. These include 38 items on participation in international activities, 82 items on technological development, 47 items on educational dissemination and 57 other items related to sustainable development activities. A total of about NT\$5.1 billion has been budgeted.

However, there were some omissions in the results. Although this was due in part to inadequate coordination between work groups, it is difficult to avoid duplications or omissions in a job that requires integrating information from numerous sources into several workgroups. To reduce omissions, the EPA will coordinate with authorities to ensure that, when budgets are being prepared, NCSD work group, use and budget classification information is submitted to the NCSD for any sustainable development activities.

The EPA has reached a consensus with authorities whereby the EPA will be responsible for compiling information from NCSD member agencies while NCSD member agencies will be in charge of compiling information from non-member authorities and submitting it directly to the NCSD.

This compilation and investigation work is to proceed until January of next year. When this process becomes routine, Taiwan will have a much clearer picture of efforts made toward national sustainable development.

## *News Briefs*

### *Amended Toxics Transportation Regulations Amended*

On August 19, in line with the system of regulating toxic chemical substances according to their classification and quantity, the EPA formally announced the amended *Toxic Chemical Substances Transportation Regulations*. The key points of the amendment include designating toxics use as an activity requiring registration for future inspection, revising transport vehicle labeling to show the proper competent authority and adding an emergency response clause for sudden incidents.



### *Pingtung County Listed as Low Sulfur Oil Control Area*

On August 19, the EPA formally announced Pingtung County's listing as a low sulfur oil control area. Other such areas include Taipei City and County, Taoyuan County, Keelung County, Kaohsiung City and County, and Taichung City and County. Fuels that have a sulfur content greater than 0.5% used in low sulfur control areas and greater than 1.0% used in all other areas are listed as substances that easily cause air pollution. All such users or vendors must obtain a use permit. The announcement is effective from October 1.

### *EPA Formulating Procedural Rules for EIA Review*

To ensure that Environmental Impact Assessment (EIA) reviews are reasonable and fair, the EPA is drafting a set of procedural rules. Apart from stipulating the methods that can be used to shape conclusions, the procedural rules also place stipulations on public petitions and protests. The draft is nearly complete and will soon be submitted to the EIA Committee for approval.

### *Environmental Personnel Installation Regulations to Be Loosened*

On August 26, the EPA formally announced an amendment to the *Dedicated Environmental Protection Unit or Personnel Installation Regulations*. According to the amended regulations, 24-hour installation of toxics control dedicated personnel will be cancelled, however all regulations concerning dedicated personnel in other areas will remain unchanged. In addition, installation of grade-two dedicated personnel in the areas of industrial or sewer systems with a wastewater volume of between 50 and 100 CMD will no longer be required. However, if a severe violation of water pollution controls results in suspension of operations or closure of a business by the competent authority, installation of grade two wastewater treatment personnel is required while the company is applying for the resumption of operations. In addition, a comprehensive examination and revision of the *Environmental Project Department or Personnel Installation Regulations* is already underway. In the future, regulation may be classified according to operation and management rather than by grade.

### *Recycling Fee Evaluation Committee Installation Regulations Amended*

On August 26, the EPA formally announced the amended *Recycling Fee Evaluation Committee Installation Regulations*. The amendment added rate evaluation principles of which one was to considerably raise the rates for recycling containers made of composite materials. The amended regulations also charged the committee with evaluating, investigating and researching committees of more than three members with related expenses to be born by the Recycling Fund Management Committee's not-for-profit department.

### *Car and Motorcycle Recall Guidelines Announced*

On September 1, after having gone through many drafts over the years, the EPA formally announced the *Car and Motorcycle Recall Guidelines*. The guidelines will go into effect on January 1 of next year. According to the amended guidelines, infrared remote testing will be the priority method for pinpointing high polluting vehicles. Manufacturers or importers of engine classes or models determined to be out of compliance will be required to recall such engines.