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Amendments to Effluent Standards Rolled Out

The EPA recently announced the implementation of amended effluent standards. Because the paper industry has cooperated to increase recycling of waste paper, the industrial categorization for the industry is different from that laid out in the 1997 standards. As a result, paper manufacturers will be assigned different standards according to the amount of recycled materials they use in production. Also, the differences in methods for testing wastewater true color values have been adjusted, and chemical oxygen demand standards – the most controversial part of the new standards – will be set at 1998 levels. The EPA has indicated that after the standards have been in effect for a half year, amendment of industry sub-category standards will be reviewed.

After a long period of discussion, the new effluent standards were finally put into effect on February 9. In fact, the 1998 effluent standards were drafted in 1991 to give manufacturers plenty of time to prepare. Prior to implementation in 1998, however, many firms expressed their concerns that compliance would be difficult. They requested that an implementation grace period be granted.

In response to the opinion of industry, the EPA agreed to granting a grace period on December 24, 1997. Firms in seven major industries such as chemical manufacturing, pulp and paper, petrochemicals, animal husbandry, leather production, and dyeing were requested to submit improvement plans and then granted a grace period for compliance with the new standards. Because the grace period expired early this year, the EPA once again reviewed and amended the effluent standards.

The key points of this round of amendments include differentiated chemical oxygen demand (COD) standards for paper manufacturing firms. An EPA official recently indicated that because paper manufacturers comply with resource recycling policies and use large amounts of recycled paper in their production processes, their COD levels have increased. In response, the EPA has set two standards for this industry. Paper manufacturers whose material inputs are made up of more than 60% recycled paper are required to comply with a COD limit of 180mg/L. Firms that use inputs made up of less than 60% recycled content must comply with a 160mg/L COD standard. And firms that do not use any recycled paper face a limit of 100mg/L.

To address the differences that exist in the testing methods for identifying true color levels in wastewater, the EPA has set the standard at 550. On account of fair control goals, all industries will be held to the new 550 value, and the standard method for testing shall remain the current approved method.

In response to the controversy over the new COD standards, the EPA pointed out that it has already worked to help industry make improvements by extending the original deadline for compliance until the year 2000. At the same time, many firms have already submitted improvement plans to the EPA and to further extend the grace period for other firms would not be fair. Moreover, in a recently conducted two year analysis of environmental inspection data, the EPA found that 81% of all firms in Taiwan can currently comply with the 1998 effluent standards. As a result, control values will not be readjusted again in the near future.

Nonetheless, if the EPA discovers that a firm is properly operating wastewater treatment equipment but is still having trouble complying with the standards, the firm may be granted special-case status, and the possibility of opening new standard sub-categories will be assessed. The EPA's Bureau of Waste Water Control indicated that the EPA has already actively implemented research into the impact of the new standards on the seven major industries. If after this year's halfway point, it is confirmed that firms are truly having difficulty complying with the new standards, the central government will adopt appropriate response measures.

Executive Yuan Passes Initial Review of Draft Marine Pollution Act

The Executive Yuan has finished initial review of the draft *Marine Pollution Control Act*. According to the draft, in the future the EPA will delineate marine control zones and set marine environment control standards. The EPA will also formulate a zone-based implementation plan and pollution control measures. Emergency response plans for marine oil spills will also be drawn up by the EPA, and a cross-departmental task force for handling oil pollution incidents will be established.

On February 21 a draft of the *Marine Pollution Control Act* passed a gathering of related departments called by the Executive Yuan (EY). In the near future, the draft Act will be sent to a full meeting of the EY for deliberation. The EPA noted that it sent the draft Act to the EY for consideration on June 3, 1999, which after numerous consultations was just recently set.

The establishment of a *Marine Pollution Control Act* is intended to set control standards for a number of serious sources of marine pollution, including land based sources, marine area construction, treatment of solid wastes at sea, and marine vessels.

The Act would approach pollution control in terms of both prevention and clean up. In addition, the Act also deals with questions of compensation liability for damages sustained by pollution, and punishment for violations of the law.

The EPA noted that future enforcement of the Act will be commissioned as the responsibility of the newly established Coast Guard Administration. According to the draft, the EPA will set environmental classifications for marine areas and marine environment quality standards. The classifications and quality standards, as well as any special regional characteristics, will be used to delineate marine control zones and accompanying marine environment control standards. From these a zone-based enforcement plan and pollution control measures will be formulated. Competent authorities from all levels of government would be required to set up environmental monitoring stations for marine areas under their jurisdiction, and regularly release monitoring results. They will also be required to take appropriate preventative measures, and when necessary industrial authorities may restrict use of marine areas.

The draft Act stipulates that the EPA should formulate an emergency response plan for handling incidents of marine oil pollution. Although the EPA should set up a cross-departmental working group for dealing with general pollution incidents, the EY will be responsible for setting up a special task force for handling grave incidents of marine oil pollution.

In terms of preventing land based pollution, the draft of the *Marine Pollution Control Act* contains statutes which require all public and private sites to obtain permission from the EPA before being allowed to release effluent into marine areas. Release of effluents is also prohibited in the following marine or coastal areas: natural preserves, ecological conservation areas, national parks and ecologically protected areas, special scenic areas, recreation areas, wild animal protection areas, marine resource conservation areas, and other areas specified by the central government.

To prevent pollution resulting from waste treatment at sea, the EPA will collect a marine disposal fee from all those using the ocean as a final disposal site. The fee will be based on the quantity and nature of the pollutants disposed of. In the future, all public and private sites using marine vessels, aircraft, marine facilities, or other methods to dispose of or incinerate waste at sea, will have to apply for permits from the EPA. Moreover, they will only be permitted to perform disposal or incineration in areas designated by the EPA.

Management of ocean dumping will be based on the material characteristics of the pollutants to be dumped and their effects to the marine environment. Substances will be categorized into type A, B, and C substances. Type A substances may not be disposed of in the ocean, Type B substances may be dumped only with approval each time by the central competent authority. Type C substances may be dumped within times and quantities approved by the central competent authority. Violation of these regulations, such as ocean dumping Type A substances that results in serious marine pollution, can lead to punishments as severe as a maximum 10 years in prison and total fines from 20 million to 100 million NTD.

During the transition phase for adjusting to the new regulations, existing operations not in compliance with the law should apply for an improvement deadline within 6 months of the Act's implementation. Before expiration of the improvement deadline, the operation will not be fined according to the Act. However, compensation must still be paid for any pollution related damages incurred.

Total Pollution Quantity Controls Promoted in Kao-Ping Air Quality District

Due to the relatively poor air quality in the Kaohsiung-Pingtung area, the EPA has decided to initiate a pilot program for controlling pollution on a total quantity basis. This program will urge manufacturers to reduce air emissions as early as possible. The EPA is also considering strengthening emissions controls during times when weather patterns contribute to a worsening of air quality. Currently, total pollution control plans are being drafted and a demonstration project should be carried out in July.

Based on domestic weather and geographical conditions, Taiwan is currently divided into seven air quality districts that represent the probable circulation of air pollution between certain major cities. Of these, the Kao-ping district, comprising Kaoshing City and County and Ping-tung County, has the worst air quality. In 1999, for example, 12.84% of air quality monitoring station-days were classified as having unhealthy air quality. This was three times worse than the national average of 4.34%.

At a meeting on February 16, the EPA announced that it will promote a "Pilot-phase Total Pollution Quantity Control Demonstration Plan" in the Kao-ping air quality district. Director General of the EPA's Bureau of Air Quality and Noise Pollution Control, Hsiung-wen Chen, stated that this plan has its legal basis in the country's *Air Pollution Control Act*.

Prior to the promulgation of amendments to the

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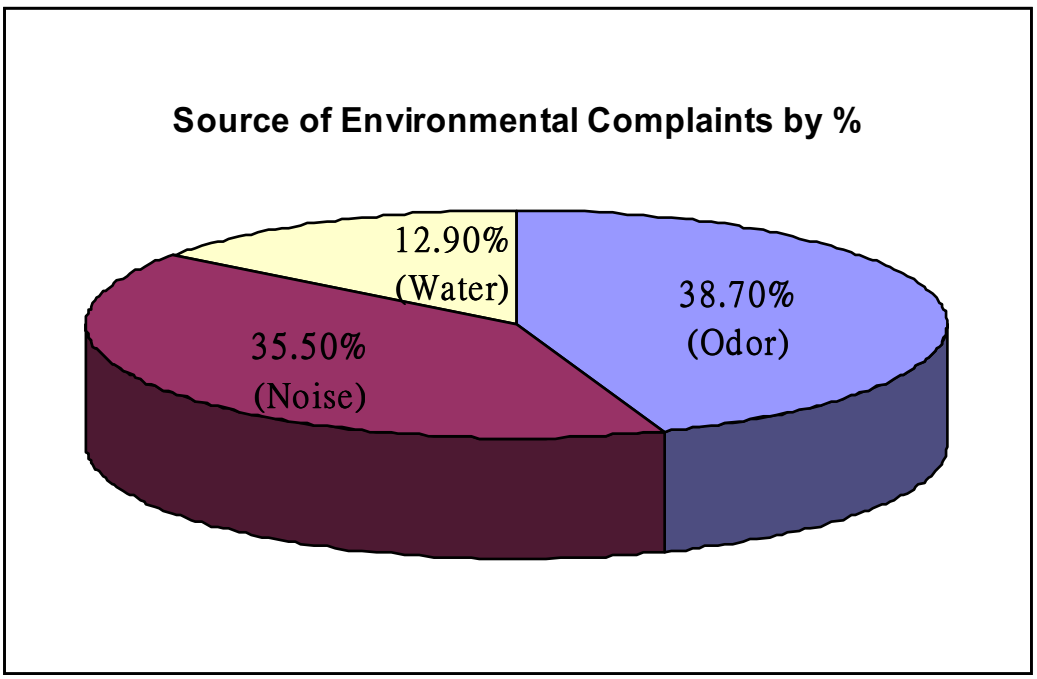
Re-investigation of Environmental Complaints Progresses Smoothly

Recently the EPA has been pushing the re-investigation and follow up of significant environmental complaints. The results of these investigations reveal that the focus of complaints has shifted from industrial to urban pollution. After persuasion and auditing, over 89.25% of cases investigated were settled.

The EPA is intent on raising public satisfaction with the administration of public environmental complaints and preventing future disputes from breaking out. To this end, computers at the EPA Reporting Center screened out 93 significant environmental complaint cases from January to June of 1999 for thorough follow up and re-investigation. Among these, in 83 cases improvements had already been made, or the pollution disappeared, and the case settled. This 89.35% settlement rate shows that environmental agencies of all levels attach great importance to handling public environmental complaints.



According to EPA analysis, of the 93 cases, 36 (38.7%) involved odor, 33 (35.5%) involved noise, and 12 (12.9%) water pollution. By regional distribution, 48 (51.6%) were from Taipei County and 20 (21.5%) from Taoyuan County. The two regions together accounted for over 70% of all the cases, reflecting higher demands for environmental quality of life by residents of northern Taiwan, and a relatively aggressive attitude in pursuing personal liberties.

The EPA noted that annual review and re-investigation of significant environmental complaints is divided into two phases. The first phase is carried out by local environmental protection bureaus (EPBs), and mainly focuses on ascertaining whether or not the investigation was legitimate, whether or not improvements have been made to the pollution, and whether or not the case was properly settled. Each case is checked thoroughly. Of the cases reviewed this year, 78 cases were recommended closed because the pollution had disappeared, a settlement rate of 84%. Another 15 were recommended for further follow up and listing. According to the review records, the EPA's inspection team carries out the second phase of control and re-investigation. The second phase focuses on better understanding the progress of pollution improvements, and initiating talks with the public to see whether or not they feel any of the improvements made.

The EPA stated that results from these talks show that most people are positive about the efforts of environmental personnel. The re-investigations carried out this time also reveal that the subject of public pollution complaints has shifted from the classic large industries, to complaints about ambient environmental pollution associated with urban or living conditions.

Furthermore, the EPA has discovered that although investigation of disputes in mixed industrial, commercial and residential districts results in conformance with emissions stan-

dards, the public is still unable to accept the results and will continue to file complaints. This points to an existing gap between regulatory standards and public expectations. Mere reliance on strict environmental auditing tactics is not enough to solve these problems. Appropriate urban planning is one of the fundamental tools necessary to prevent conflict between emissions standards and residential environmental quality.

EIA Review Criteria for Industrial Parks Approved

The EPA' s Environmental Impact Assessment Committee recently approved criteria for reviewing industrial park EIAs. These criteria require that when industrial parks are developed, they must include total emissions controls on air and wastewater. They also require that industrial parks have the capacity to recycle at least 70% of the water used in the park. In response to international trends toward reducing green house gas emissions, future industrial parks must also establish greenhouse gas control plans and reduction strategies.

In order to strengthen the review process of environmental impact assessments (EIA), the EPA recently established a set of guidelines for developers to follow when performing EIAs. The EPA has also endeavored to strengthen EIA review efficiency and set industry based standards for the EIA review process.

As part of this drive, the EPA's EIA Committee recently approved criteria for performing industrial park EIAs. Even though these criteria are for internal use by the EPA, they still have an impact on the decision of whether to approve industrial park development. As such, developments are being watched closely by a wide range of interested parties.

The EPA indicated that when these criteria were developed, the EPA took into consideration the results of contracted study and the results of several recent EIA review conclusions.

According to criteria, not only must industrial parks be developed in accordance with relevant environmental regulations, they must also be in compliance with the goals of the National Environmental Plan. Furthermore, industrial parks cannot be situated in major reservoir watersheds, in drinking water source protection areas, within certain distances of drinking water collection points, in tap water source protection areas, in non-urban forest lands, or in other areas legally set off limits. Also, if the area to be developed is classified as an animal habitat or of special ecological significance, then it will have additional limits placed development activities and developers must implement protection plans. If the proposed development activity has a significant impact on national resources, then it either must be aborted or implemented only under strict criteria.

The EIA review criteria also stipulate that development of coastal trees stands used to secure soil and stop erosion should be avoided. If the development is located on a hillside, post-development forest coverage must make up at least 50% of the total area. And, development sites situated on agricultural land must set aside green-belt perimeters of at least 20 meters in width; and if the development is not compatible with surrounding agricultural activity, the green-belt must be at least 30 meters wide. Topsoil across the entire site must be protected through establishing a conservation area or green belt area.

In terms of pollution control, the criteria require industrial parks to implement total air pollution quantity control plans. If, under current circumstances, an industrial park does not comply with air quality standards or if the development of a park exceeds air quality standards, pollution offset measures should be taken. Requirements for total water pollution quantity control plans are also in place. If an industrial park's wastewater treatment capacity is already full, then the park can only encompass non-wastewater generating firms, or stop the entry of firms. Because water provision problems often become serious points of contention for planned industrial parks, the criteria require that industrial parks recycle at least 70% of the water used. This requirement will not apply under special circumstances.

As for the international concern regarding reduction of carbon dioxide emissions, the criteria require that firms within industrial parks implement total CO_2 emission control plans and strategies.

The EPA indicated that measures urging manufacturers to upgrade equipment have already been amended and were promulgated in January of this year. Industrial park developers that are moving development forward and have entered that planning and assessment stage should be aware of these requirements. Otherwise, their development plans may be rejected or returned for modification.

Feature Article

Predicting the Future: A Brief Introduction to Air Quality Forecasting

In order to raise the general public's environmental awareness and get a better handle on air quality, the EPA began daily air quality forecasting in 1992. By 1996, an island-wide forecasting network had been established. After many years of implementation, the quality of air quality forecasting is moving towards maturity. In the future, the EPA will raise forecasting accuracy through gradually developing a more objective forecasting system based on the special characteristics of various regions.

For the past several years, the EPA has been providing next-day forecasts of air quality throughout Taiwan. This service is offered with the intention of raising the public's awareness of the surrounding environment and to remind the public to abide by relevant support measures when poor air quality days are eminent.

Air quality forecasting works under the basic assumption that daily emissions of air pollutants change less than the weather changes; therefore, changes in weather can be used to predict air quality the next day.

For practical and technical reasons, all EPA air quality forecasts use the Pollution Standard Index (PSI) and rather than pollutant concentrations so that the public can more easily grasp air quality status. Because the major indicator pollutants in Taiwan are particulate matter and ozone, the EPA next-day forecasts are mainly based on these two pollutants. The forecasts are valid for the next 24 hours.

Since January 1992, the EPA has made use of weather surveys to forecast next-day air quality for the greater Taipei region. In August 1992, forecasting for the greater Kaohsiung area was also initiated. These initial forecasting methods used particulate matter as the indicator pollutant, and in April 1993, ozone was added as another indicator pollutant.

By December 1993, forecasting was expanded to include Keelung City in the north and all of the Tainan-Kaohsiung-Pingtung region in the south. One year later, 66 air quality monitoring stations throughout the island were completed, thereby allowing Taiwan to be divided into eight forecasting districts. In this same year, the Taichung-Changua area was also brought under the forecasting umbrella; and by March 1995, the areas of Hualien, Taitung, Taoyuan, Hsinchu, Miaoli and Yi-lan were also added.

Finally, four years after initial implementation, the remaining areas of Nantou and Yun-lin were added. This completed the island-wide network for forecasting next-day air quality values of particulate matter and ozone PSI.

The process of forecasting involves utilizing the most recent data from air quality monitoring stations to analyze regional air pollutant concentrations and meteorological conditions. After initial analyses are performed, air quality data from the Taiwanese and Japanese weather bureaus is used to analyze weather conditions in Taiwan and the state of regional air circulation. After integrating these two types of data, model simulations are performed, and the data is interpreted by experienced forecasting personnel to make an initial prediction of air quality values for the next day. Prediction data are provided daily to the media and to environmental agencies, as well as put on the EPA website so that the public can review the data at their leisure.

Changes in space and time, for air quality forecasting is more complicated than in general meteorological forecasting. Even after many years of research and development, there is still uncertainty inherent in weather forecasting. Given this uncertainty, the use of weather forecasts to predict air quality is an important topic of discussion. Since 1992 when the EPA began air quality forecasting, with the help of academics and experts initial results have already been seen. Current goals include improving the forecasting assistance system and reporting methods. A database of weather patterns will also be actively developed and will allow for the systematic evaluation of errors and thereby raise forecasting accuracy.

Reuse of Earthquake Rubble to be Contracted Out

The earthquake that hit Taiwan last year leveled many buildings and left 18 million cubic meters of rubble in its wake. To deal with this problem, the EPA plans to have the rubble cleared away and reused by firms selected through an open bidding process. Over the next 7 months, 15 dumpsites will cleared. And, within 5 years, all the rubble will be completely reused.

Last year's major earthquake destroyed a large number of buildings in Central Taiwan and thereby

created a significant solid waste problem. To deal with the rubble, the EPA set up 106 dumpsites with a total area of 280 hectares and a capacity to handle 18 million cubic meters of waste material. To prevent secondary pollution arising from the rubble, the EPA drafted a plan to promote the recycling and reuse of the waste. To discuss this policy with concerned parties, the EPA convened a discussion meeting on January 26.

Rough estimates indicate that of the more than 18 million cubic meters of rubble generated, about 800 tons have been used as filler, while over 1000 have yet to be properly treated. Of this amount, 10 million tons of rubble in 15 sites will be temporarily stored. The EPA has drafted plans to have the waste material reused in public construction works.

Director of the EPA's Central Taiwan Office, Chang Houng Jang, stated that the Executive Yuan has already agreed to provide the first installment of funding. In addition, the EPA has formulated a set of criteria for contract bids to remove and reuse solid waste from the earthquake, which was given to local governments, and hopes that implementation of reuse plans is not far off.

Research has indicated that the dumpsites have separation equipment which will allow the rubble to be sorted into reusable and recyclable components. The cost of processing each ton of rubble is 200 NTD, including transportation costs. The organization handling the research into recycling possibilities, Taiwan Construction Research Institute, has indicated that these promotional efforts are intended to put in place mechanisms for recycle and reuse of the waste. Several bottlenecks have been encountered, however. The most serious is material production and application.

The EPA has set a timetable that aims to, after seven months, have completely removed material from 15 dump sites. Collection and separation tasks will then be completed in the next five years. It is hoped that the private sector will also work to help promote this type of plan. Worth noting is that haulers will not be permitted to bring in outside (i.e. non-earthquake related) waste for treatment or dumping. Furthermore, to ensure that contracted firms maintain a high degree of responsibility, they will not be permitted to either subcontract the work or transfer the contract to another party.

Results for 1999 Drinking Water Audits Released

Environmental agencies in Taiwan have strengthened management and auditing of drinking water, and in 1999 alone performed over 20,000 audits. Audits revealed that 0.46% of tap water and 16.59% of drinking water facilities did not conform with relevant standards. Audits of water sources for bottled water revealed that 8% were not up to standards.

After revision of the *Drinking Water Management Statutes* on May 21, 1997, the EPA's efforts to manage drinking water have begun to show results. To ensure proper hygiene standards for Taiwan's citizens, in 1999 environmental agencies took over 13,226 samples of tap water, performed 5,709 audits on drinking water facilities in public and private sites, and over 200 audits of water quality and treatment additives in water purification plants.

The EPA noted that since implementation of the revisions, local environmental agencies have worked in conjunction to execute all aspects of the EPA's auditing work. They have been equally helpful in the formulation of key auditing and enforcement plans, such as tap water sampling and drinking water equipment maintenance plans.

EPA statistical results from the 1999 audits show that out of 13,226 tap water samples taken by environmental agencies, 0.46%, or 61 samples, did not conform with specifications. Of the 13,187 samples taken from direct supplies of drinking water, 0.37%, or 49 samples were not in compliance. Results were much poorer for samples taken from indirect water supplies, where out of 39 taken 12 were not in compliance, or 30.77%. The most common reason for non-compliance was total bacterial count. In addition, the EPA also tested for 34 other pollutants listed in drinking water standards, such as heavy metals, pesticides, and VOCs. In total 125 sample points were selected, 155 samples taken and 5,270 item tests performed. From the samples taken, only one sample was found to slightly exceed drinking water standards for two items. In this case, fines were levied according to the law and improvements have already been completed.

As far as the maintenance of drinking water facilities and equipment, a total of 5,709 audits were performed. Of the 3,840 falling within legal statutes for stationary continuous water supply facilities, 3,303 were already in compliance with regulations requiring regular equipment maintenance and water quality testing, a conformance rate of 83.41%. Of those not in total compliance, 581, or 15.13%, were urged by local governments to make improvements, and 56, or

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1.46%, were penalized according to the law. In comparison with previous compliance rates of only 60%, improvements in equipment maintenance is obvious.

Additionally, environmental agencies also tested over 200 water purification plants for water quality and use of additives. Results show that the use of treatment additives by all agencies supplying tap water conforms with regulations. As for audits on water sources for bottled water, environmental agencies took a total of 61 samples over the year and found 5 samples not in compliance. Non-compliance was due to coliform bacteria.

At the end of the year, the EPA expressed it's admiration for city and county environmental protection agencies for carrying out EPA auditing plans and reaching target goals, even in the face of insufficient human and material resources. In 2000, the EPA plans to continue to strengthen auditing efforts to ensure safe drinking water for the citizens of Taiwan.

Initial Study of Keelung River Ecology Completed

Species distribution is an effective indicator for monitoring river pollution. To establish species indicators for the Keelung river, over the last four years the EPA has conducted ongoing studies on the rivers ecology. Initial indicators have already been established for algae, aquatic insects, bottom dwelling invertebrates, and fish species. The research indicates that construction on the upper reaches of the river has resulted in heavy pollution along the river. In response, the EPA will tighten site audits for these construction projects.

One of the goals of river pollution cleanup is to preserve ecological integrity. In this sense, species distribution and variation are an important tool in observing water quality and pollution conditions. For this reason, in FY 1996 the EPA began monitoring and analysis of the composition of aquatic species in the Keelung river. The study was aimed to increase understanding of the rivers ecological condition and the relationship between species composition and water quality.

The EPA noted that after four years of collecting ecological study data, they have come up with initial indicator methodologies for algae, aquatic insects, bottom dwelling invertebrates, and fish species. Furthermore, they have developed an overall river ecology quality assessment system that will be used to assess the condition of the Keelung river ecology, follow up on any quality changes to the river, and provide references to help formulate river basin management strategies.

Results from research over the past years has led to a number of findings on the relationship between water quality and species distribution. For example, species distribution changes in accordance with the degree of pollution, and the diversity of indicator organisms and species can be used to monitor the condition of water quality. The ecological quality assessment system that has been developed on these principles integrates the quality of biotic communities and habitats, and can be used for spatial assessment of the quality of different river sections, and as a tool to assess temporal quality changes.

The lower flow of the Keelung intakes large quantities of municipal waste water from greater Taipei, and as a result the small number of species that can withstand this pollution are dominant. In the water source regions of the rivers upper reaches, water quality is comparatively better and species variation is greater. Based on the combined research data from the EPA's study, there are 26 fish species in the Keelung river, 37 in the Hsintian stream, 26 in the Tahan stream, 15 in the flow of the Tamshui river.

The EPA stated that during the study, signs of progressive ecological deterioration were discovered in the upper flow of the Keelung river. After comparing different quality indicators, the main reason for ecological deterioration was found to be destruction of river bank habitats. Furthermore it was revealed that the two major factors affecting river basin habitats are up stream development and river bed construction. The EPA pointed out that pollution created at construction sites increases water turbidity. Suspended solids in a river influence the quality of drinking water and its sense of aesthetic beauty. Furthermore it obstructs light from penetrating the water and hampers the generation of dissolved oxygen. This affects the respiration of fish and is detrimental to their survival. Exposure or paving of the surface of the river bank removes any buffers that exist against non-point source pollution or torrential rains, which can then directly enter the water system and increase stress on the river.

For this reason, the EPA will include construction site pollution among its key plans, and select certain construction sites for demonstration projects. In accordance with promises made in environmental impact assessments, construction units will be requested to faithfully build and operate sedimentation pools, and establish measures to control non-point source pollution, such as coverage or vegetation of exposed

surfaces and control of soil runoff. These measures should lighten the burden created by suspended solids and help improve ecological quality for the river basin. In the future, the EPA will continue to monitor river ecology and try to understand ecological quality through long term monitoring of river organisms and species. Furthermore, the EPA will take all necessary measures to stop pollution in time.

International Experts Discuss CDM in Taiwan

The EPA held an international conference to explore policies to help Taiwan in greenhouse gas reduction. In light of the particular nature of Taiwan's political situation, international academics recommended Taiwan work in the spirit of early action to establish an emissions reduction verification system. In addition, the EPA is encouraging Taiwanese enterprises to actively participate in the international non-governmental emissions trading association that has been established.

In order to stay abreast of trends for international greenhouse gas (GHG) emissions control and transnational cooperation on emissions reduction, from February 22 to 24 of this year, the EPA held both the Symposium on Private Participation in the Clean Development Mechanism and the Clean Development Mechanism Work Shop and Project Planning conference. At the meetings, six experts from the International Emissions Trading Association (IETA) visited Taiwan to meet with domestic enterprises, academics, experts, and government representatives to discuss the Kyoto Protocol's flexible mechanisms, testing and verification in the clean development mechanism, and trading of emissions reductions credit through the clean development mechanism. These meetings are the first direct exchange Taiwan has had with experts from important international organizations on GHG control strategies.

To prevent climate change and reduce emissions of GHG, in 1992 the United Nations (UN) passed the UN Framework Convention on Climate Change to control the release of manmade GHG. Following, in December of 1997 the third Conference of the Parties (COP-3) held in Kyoto, Japan, the legally binding Kyoto Protocol was passed, which clearly lays out the responsibilities of industrialized nations in reducing GHG. To this end, the Kyoto Protocol restricts the amount of carbon dioxide (CO_2) that can be emitted, directly affecting the economic development and industrial composition of each country. For this reason, all countries have moved actively to adjust related energy and industrial policies and develop transnational cooperation channels for emissions reduction, based on the Kyoto Protocol's flexible mechanisms (three in total: joint implementation, clean development mechanism and emissions trading). Of the three transnational cooperation channels, the clean development mechanism (CDM) is the most striking. CDM allows developed nations to use technology and capital investments to help developing nations reduce GHG emissions and reach other sustainable development goals. The investing country can then receive GHG reduction credits.

Although Taiwan is not a United Nations member country, to fulfill it's duty for protection of the global environment and pursuit of sustainable development, in May of 1998 Taiwan called the National Energy Conference. At the conference, Taiwan's energy and industrial policies were discussed as well as Taiwan's status and reduction targets as defined by the Kyoto Protocol. Furthermore, international cooperation was sought in GHG reduction to cushion the impact that the Framework Convention on Climate Change would have to Taiwanese industry. According to assessments made at the conferenence, full attainment of Taiwan's reduction targets at the current stage will be very difficult. However, obtaining reduction credits through CDM participation would be a big boost in reaching these goals. In realization of this fact, the recent conferences were held to seek international help and plan Taiwan's CDM participation.

During the three day meeting, domestic and international experts expressed support for Taiwan's position on the Framework Convention and setting of GHG reduction targets. Furthermore, attending experts expressed that because Taiwan is not an official treaty member, actual participation in CDM will be very difficult. They suggested that Taiwan should still work in the spirit of early action, and imitate Australian policies on domestic emissions trading and international CDM regulations. This way, Taiwan will be prepared at the earliest possible moment to plan and establish any relevant systems necessary to meet probable trends

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in international development.

According to international experts who attended the meeting, based on Taiwan's current situation, moves should be made to first establish a GHG reduction verification system. Measures would include: establish emissions inventories for all of the major GHG emitters, establish and monitor all major GHG emitter systems, and set annual reduction targets for existing industries or establish penalty mechanisms. Because the meetings provided an important new domestic outlook on international GHG reductions, the EPA noted that, in the future they will work to establish more partner relations with these important international organizations, and draft feasible GHG reduction programs for Taiwan.

The International Emissions Trading Association, commonly known as "IETA", was establishmed last year as a global non-governmental organization. At it's initial founding, the association already has membership from BP Amoco, Shell, and 27 other well known international enterprises whose primary motive is to build an international forum for GHG emissions trading. The EPA noted that to expand international exchanges and get a grip on the development trend for GHG emissions trading, the EPA recommends that large domestic enterprises apply for membership. This way they can become familiar with international operation systems at an early stage and participate in opportunities for collaborative emissions reductions.

35 Local Governments Receive Praise for Recycling Excellence

The EPA has been encouraging 100 townships to raise their recycling rates to 10% or above. As part of this policy, the EPA recently openly praised 35 governments for their excellence in implementing recycling programs. The EPA also took the opportunity to hear opinions from local government administrators on the issue of recycling.

To raise island-wide recycling rates, the EPA plans to raise the recycling rates of 100 town and village to 10% or above by year's end. As a step in realizing this goal, the EPA organized two events on January 25: "The 1999 Awards Ceremony for Achievement in Local Government Recycling Efforts," and "The 2000 Clean Brigade Recycling Management Technology Symposium." For these events, the EPA invited Premier Vincent Siew to attend and make remarks.

In his speech, the Premier pointed out that Taiwan has for years pursued the goal of economic development and, as a result, has paid a high environmental price. He stated that as part of the government's effort to implement "Agenda 21" and sustainable development, greater emphasis will be placed on establishing comprehensive environmental protection and resource recycling and reuse industries. This will be a step toward complete utilization of Taiwan's limited resources. The Premier also expressed his respect for daily efforts of cleaning personnel. He further stated that the government has initiated a death benefit package for cleaning personnel, to let the island's 26,000 cleaning personnel rest easy about insurance coverage.

During the event, EPA Administrator Hsun-Hsiung Tsai presented the awards to 35 local governments units that demonstrated excellence in carrying out recycling. Among the 35 local cleanup crews that received awards were Kaohsiung City, Taipei City, Hualien County's Ji-An Village, Nan-Tou County's Chu-Shan Town. The awards recognize the daily devotion of the cleaning personnel in these areas. This incentive system is the key element in the EPA's drive to raise recycling rates in 100 locales by the end of the year. Topics addressed at the event included 1) promoting international recycling policies, 2) analyzing the status of recycling promotion by cleaning personnel, and 3) announcing the extension of benefits to cleaning personnel.

After the conference, the EPA convened a meeting to discuss how recycling activities by the cleaning brigades could be strengthened. Cleaning personnel expressed their concern that landfill capacity was not adequate. At present, this is still the most frustrating problem faced by local-level governments. During the meeting, the chief of the cleaning brigade suggested that the EPA ban the production of polystyrene foam and set up a recycling fund from recycling fees from large users of plastic cups. In response, the EPA stated that it would take these suggestions into consideration when setting future policy.

Soil and Groundwater Testing to be Strengthened

After passage of the Soil and Groundwater Pollution Remediation Act, the need for soil and groundwater testing has greatly increased. The EPA noted that the pollution testing methods used by both government agencies and remediators must comply with EPA regulations. In addition, if enterprises have need of testing services, they must hire a credited testing contractor. The EPA called on interested testing contractors to accelerate application for certification, and is working actively to complete formulation of relevant testing methods.

After passage of the *Soil and Groundwater Pollution Remediation Act*, the EPA will begin pushing harder for more soil and groundwater testing. The EPA pointed out that in accordance with the new Act, there are a number of circumstances under which soil and groundwater testing must be carried out. For example, city and county governments should regularly monitor and test the quality of soil and groundwater in their jurisdiction, and the results of such testing should be publicly reported. When testing reveals that pollution levels exceed base standards, necessary measures must be taken.

Furthermore, industries designated by the EPA must provide testing data on soil and groundwater pollution before setting up a new factory, stopping production, or closing shop. Only after this data has been registered with the local site authority can the enterprise file the necessary applications with the competent authority for the industry in question. In addition, when an enterprise from a designated industry transfers land, the transferor should provide soil pollution test data.

Sites suspected of polluting soil and groundwater should be investigated by the competent authority. If there is a clear pollution source, and the pollution concentration exceeds control standards, the competent authority should list the land in question as a soil and ground water pollution control site.

After initial assessment of a control site, if there is a suspected threat to the public health and living environment, it should be reported to the EPA and listed as a remedial site. The competent authority at the appropriate level should investigate the scope of pollution at the remedial site and assess it's environmental impact.

The EPA pointed out that these legally designated procedures or measures should all be performed in accordance with accurate testing data. The EPA's National Institute of Environmental Analysis (NIEA) has already set about formulating standard soil and groundwater analysis methods. NIEA is also encouraging private testing institutes to obtain certification so that they may be commissioned for future soil and groundwater testing work. NIEA has already formulated permitting procedures to help enterprises prepare for application. The EPA is calling for environmental testing institutes with interest in obtaining this work to complete permit application as soon as possible.

To maintain the quality of testing data, the *Soil and Groundwater Pollution Remediation Act* strictly requires that approval of testing data must pass the EPA or other organizations permitted by the central competent authority. In addition, to effectively manage testing organizations, the Act also stipulates that violation of testing regulations will result in a fine of 200,000 to 1,000,000 NTD. And when necessary, the testing permit of the organization in question may be revoked. The EPA expressed that it will continue to strengthen permit controls in the future based on the law to make certain that accurate data is available for policy decisions on pollution remediation, and to avoid inappropriate administrative measures.

News Briefs

Program to Encourage Exchange of Old Motorcycles Extended

To reduce the amount of pollution emitted by motorcycles, and thereby promote a cleaner, safer living environment, the EPA has been promoting a program that encourages owners of older, more polluting motorcycles to retire their vehicles. The program was initiated in December 1998 as a pilot project, however due to its considerable success, the EPA has decided to extend the incentive program until November 30, 2000.

EPA Confirms Recycling Refund Rate for PET bottles to Drop

To bring equilibrium to the recycling market, beginning on April 1, 2000 the EPA plans to reduce the PET bottle recycling refund from 1 NTD to 0.5 NTD per bottle. After six months results will be discussed and the refund mechanism reevaluated. This proposal was discussed at a recent recycling fee rate review committee meeting.

Reporting of Activated Carbon Use by Municipal Incinerators to be Enforced

Public concern over dioxin emissions from municipal incinerators has recently become an important issue. As a means of removing dioxins from incinerator emissions, facility operators often use activated carbon to filter out the harmful substance. To ensure that incinerators are taking adequate measures to reduce dioxin emissions, the EPA is considering an activated carbon-use reporting system as a means to monitor dioxin removal efforts.

(continued from page 3)

Air Act, the EPA had proposed that the Central air quality district first be targeted for implementation of total pollution controls. However, as a result of last year's devastating earthquake, the central area of Taiwan lacks the economic resources to implement any large-scale changes. Moreover, the Taichung County government has been strengthening enforcement of emissions standards for power generation facilities. As a result, the timetable for total pollution quantity controls in the area has been pushed back. In turn, he EPA has accelerated the timetable for the pilot project in the Kao-ping district, which will go into effect in July.

Upcoming Activity Notice

Seminar on Environmental Product Design Specifications
Open to anyone involved in product R&D, production, quality or environmental management
Time: April 20th and 25th , and May 4th
Location: Taichung, Taipei, and Kaohsiung respectively
Sponsor: Taiwan Electrical and Electronic Product Development Association
Contact: L.Y. Weng ( )
Tel. (02) 2999-3600 xt. 109

Technicians Seminar on Clearance and Treatment of Electronics in the Taiwan Region.
Aimed at raising local recycling, clearance and treatment skills for electric and electronics products in Taiwan
Time: June 13th and 16th
Location: Grand Formosa Regent Hotel, Taichung
Sponsor: General Waste Recycling, Clearance and Treatment Fund
Contact: W.C. Chang ( ),
Tel. (02) 2375 3013 xt. 155

Seminar on Control Strategies for General Containers
Open to representatives from industry, government, and academic circles to discuss future control strategies for the listed but difficult to recycle general containers
Time: April 27th
Location: National Taiwan University
Sponsor: EPA Bureau of Solid Waste Management
Contact: S.H. Hsiao ( )
Tel. (02) 2311 7722 xt. 2611

Public Hearing and Discussion on Revisions to the Water Pollution Control Act
Discussion of steps to be taken for the *Water Pollution Control Act* in light of the implementation of revisions to the *Executive Procedures Act*. Open to relevant departments and associations.
Time: April 14th
Location: Taiwan EPA
Sponsor: EPA Bureau of Water Quality Protection
Contact: S.C. Tung ( )
Tel. (02) 2311-7722 xt. 2833

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