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Public Hearing Held for Resource Recycling and Reuse Act

The EPA held a public hearing to discuss a draft of the Resource Recycling and Reuse Act. The draft act maintains the current publicly operated recycling fund and mandates adoption of environmentally sound measures in the future for designated industries. Also, it will be mandatory for the government to select recycled resources or their products during government procurement. In the future the regulations for tax reductions on investments will be applicable for those enterprises investing in recycling. Because all sectors still hold strong opinions on the draft Act, additional revisions will be made.

To encourage waste reduction and resource reuse and recycling, the EPA submitted the amended *Waste Disposal Act* to the Executive Yuan for examination this May. As part of the same effort the EPA recently completed a draft of the *Resource Recycling and Reuse Act* and called a public hearing to discuss the contents of the draft Act.

According to the draft Act proposed by the EPA, in the future the EPA along with the competent authority for the industry at issue may mandate that designated industries undertake the following measures during R&D, design, manufacture, or production:

1. Select and use clean production technologies
2. Use a certain quantity or proportion of recycled materials
3. Use standardized containers or packaging for designated materials
4. Other actions designated by the EPA

To gain better control of the current situation, the designated industries must report the status of their resource reuse and recycling efforts in line with regulations. The record of these reports must be available for reference for three years.

Similar to current controls on the import/export of waste materials, the EPA and the competent authority for the industry at issue will set control measures for recycled resources that involve import or export.

As for the financial aspects of recycling, the draft Act imitates the current recycling system. Industries which produce items designated for mandatory recycling must pay a fee for recycling, clearance and treatment based on their volume of business. This money will be used by the EPA to establish a recycling fund and undertake related recycling and clearance work.

The draft Act also stipulates that in the future the specified waste materials listed as reusable or resourceable will be managed by the competent authority for the industry at issue. Industries that would like to reuse waste materials that have not been listed by the *Resource Reuse and Recycling Act* should follow application procedures laid out in the *Waste Disposal Act*.

In order to clear the way for products made with

recycled materials, the draft Act supports regulations in the *Government Procurement Act*. The draft Act requests that government agencies give first priority to products bearing eco-labels and second priority to products that qualify as recycled materials, recyclable, low pollution or resource conserving during the government procurement process.

The draft also provides other measures to encourage recycling. Industries with a good record in following the regulations in the Act will receive a reward. Additionally, for certain prescribed activities, firms can deduct from between 5% and 20% of related expenses from income taxes. These deductions may be made in the year the activity was performed, or within the four years thereafter. The prescribed activities include:

1. Investment in technology or equipment for resource recycling and reuse
2. Use of recycled products as raw material
3. Investment in research and technology development for resource recycling and reuse

In regards to the EPA's draft Act, the Industrial Development Bureau (IDB) expressed that current waste management regulations are already quite complicated. To avoid confusion, the scope of the new Act should be clearly distinguished from current regulations already in place. Otherwise the new act will only become an impediment to resource recycling and reuse, contrary to its original intentions.

However, in looking at control side requirements, representatives from the waste disposal industry favored highly clear and effective specifications for resource reuse. Otherwise there is fear that industries will play the "reuse" card to avoid responsibility for waste treatment.

By the end of the hearings there were still large discrepancies between the opinions of different sectors. The EPA's Bureau of Solid Waste Management expressed that it would consider the opinions of all the participants in researching further revisions to the draft Act. The date of the draft Act's submission to the Executive Yuan is as of yet still uncertain. 

Report Released on Investigation of Acid Rain in Taiwan

The results of an investigation into acid rain in the Taiwan region were recently released. According to the report, average rain water pH value is between 4.8 and 5.1, revealing that Taiwan's acid rain problem is not severe in comparison with neighboring countries. As far as the pollutants that contribute to acid rain, atmospheric sulfate concentrations appear to be decreasing yearly while nitrate concentrations are holding steady.

To better understand the state of acid rain in Taiwan, in 1990 the EPA brought together a number of

domestic universities to research the current status, contributors and environmental impacts of acid rain in the Taiwan region. After eight years of work, an exhaustive report on this investigation has finally been released.

The EPA points out that CO_2 stored in the atmosphere (about 330ppm) reacts with rain water to form carbonic acid naturally resulting in a low acidity that is translated as a pH of around 5.6. However, formic acid, acetic acid, and other organic acids produced in nature also lower the pH values in rain, so in recent years many advanced nations and scientists have used pH values below 5.0 to define acid rain which has been polluted by human activity. In fact, judgements about acid rain are not based solely on pH values. There are numerous other factors such as electrical conductivity, anions and cations, which influence the acid-base levels of rain water.

To gain command of the acid rain situation in Taiwan, an acid rain monitoring network has been established. The network generally uses the same sampling process and analysis methods as the U.S. EPA's National Atmospheric Deposition Program (NADP). There are a total of 12 stations set up in Taipei, Kuishan, Chungli, the Taichung harbor, and other locations throughout the island.

The data accumulated over the years by these stations reveals that average pH values in Taiwan range from 4.8 to 5.1. Compared with the average pH values of neighboring countries like Hong Kong (4.2) and Japan (4.8), and with other advanced countries like the U.S. (4.2) and Europe (4.1), Taiwan's acid rain problem seems less severe. Looking at metropolitan areas, the average pH levels at the Taipei and Chungli monitoring stations have risen from 4.27 in 1991 to 4.51 in 1998, a 42% improvement. The Kaohsiung station recorded an improvement of 24%, from 4.49 to 4.61. I-lan improved 70%, from 4.35 to 4.88. Only Taichung showed increasing acidity, with pH values falling from 4.7 to 4.3. The average pH values at non-urban monitoring stations in Kenting, Daimali, Jia-i, Penghu and Alishan were all above 5.2, showing no signs of acidification.

The two major contributors to the acidification of rain are sulfates and nitrates. Over the last eight years the average concentration of sulfates in rainfall have decreased from 3.5ppm in 1991 to 2.8ppm in 1998, an improvement of 20%. The concentration of nitrates

have remained the same at 1.3ppm. As far as cations, the report shows that there is no obvious increase in ammonium ions (from the application of ammonia fertilizers) and calcium ions (from natural settling dust or limestone formations). From this the report infers that the reason behind the improvement in acid rain lies in the reduction of sulfate concentrations.

For this reason the EPA expressed that the decrease in sulfate concentrations is directly related to EPA policies to encourage the use of low-sulfur fuels over the years. Sulfur content in fuels first dropped from 2% in 1986 to 1% in 1993, and then starting in 1996 the EPA promulgated successive regulations reducing sulfur content in fuels to 0.5% in all counties and cities. Sulfur content in high-grade diesel fuels first dropped from 0.3% to 0.15%, and then in 1998 regulations were announced further lowering sulfur content to

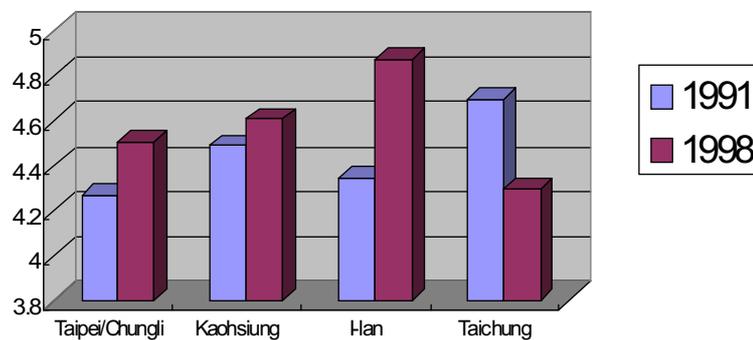
0.05%. Since the implementation of these measures the air quality values at monitoring stations have significantly improved. Compared with ten years ago SO_2 levels have improved 80%.

Beginning July 1998, the EPA also began collecting

seasonal air pollution control fees for SO_x and NO_x based on pollutant type and actual emissions quantities. The fees are aimed to encourage industries to move independently to install pollution control equipment. Other measures, such as prohibiting the sale and use of high sulfur fuels like petroleum coke and raw coal without proper authorization and the collection of a pollution control fee of 1,000 NTD per/ton for the use of such fuels, have resulted in a large decrease in the number of factories using high-sulfur fuels. This has also contributed to the improvement of acid rain.

Based on a Central University professor's research on SO_x , almost 25% of SO_x in Taiwan's ambient air drifts in from outside Taiwan's boundaries. The other 75% comes from internal pollution sources. Taiwan sits on the edge of the Asian continent and the Pacific Ocean, and is downwind of many continental pollution sources. It is clear that over the years, the amount of SO_x blown to Taiwan from seasonal northeast winds has increased. Taiwan's air quality, and hence the problem of acid rain, will continue to worsen as mainland China and other east Asian countries increase pollutant emissions. Due to the difficulties of cross boundary pollution control this issue is likely to become a thorn in the side of future efforts to deal with acid rain. ♻

pH Monitoring Levels in Taiwan



Emergency Measures for Industrial Waste Management Underway

Industrial waste control regulations have been tightened but because of insufficient treatment capacity the EPA has had to request local incinerators to help in the treatment of general industrial wastes. In conjunction with this the EPA and Industrial Development Bureau (IDB) have sped up setting regulations for joint clearance and treatment organizations to push forward installation of waste treatment facilities in industrial parks. The EPA is also revising guidelines for the contracted disposal industry to increase relevant legal foundations for waste storage.

On July 14 revisions to the *Waste Disposal Act* were announced and brought into force. Because of the strengthening of criminal liability clauses, industries no longer dare to recklessly dump waste. Before the passage of the Act waste disposal fees were often very low, but now some publicly and privately run waste clearance and treatment organizations have taken advantage of the situation to raise disposal fees, and some have even temporarily suspend services. In addition to this, a portion of county and city authorities took measures to

restrict the entrance of outside wastes after consideration of the status of industrial waste treatment in their jurisdictions. This has resulted in many factories being unable to properly treat industrial wastes.

According to estimates from the *Second Yearly Plan* of the EPA's Center for Industrial Waste Control, in 1998 a total of 18.21 million tons of industrial waste was produced in Taiwan. Apart from around 8.01 million tons of industrial waste that was reused, clearance and treatment organizations with permits from Taiwan's county and city environmental protection bureaus (EPBs) had capacity for a mere 3.2 million tons of industrial waste. This leaves close to 7 million tons of industrial waste yet to be treated. Of this untreated waste, around 6.03 million tons is general waste and 970 thousand tons can be classified as hazardous waste.

To cope with this situation, the EPA and relevant agencies established an *Emergency Dispatch Force for Industrial Waste Treatment* to coordinate overall planning. The EPA and the IDB have already taken initial steps to notify county and city governments to assemble relevant agencies and coordinate with industries

in their jurisdiction to draw up appropriate plans for industrial waste treatment. If necessary local governments may also request help from the EPA and IDB.

The EPA has also coordinated with local incinerators operating at less than capacity in hopes that they can provide an extra 1,560 tons/day of treatment capacity for general industrial waste. At present incinerators with surplus capacity include Taipei City with 440 tons/day, Hsinchu with 360 tons/day, Taichung City with 230 tons/day, Tainan City with 360 tons/day and Kaohsiung City with 170 tons/day. An EPA official pointed out that during a recently convened meeting to discuss broadening the scope of EPA work this request was relayed to the EPBs of these counties and cities without any objections from the local representatives.

In addressing the issue of waste from industrial parks, the EPA recently met with the IDB to discuss

pushing forward plans for joint treatment systems in accordance with the newly revised *Waste Disposal Act*. Estimates are that before September 1999 the MOEA and

Site Location	Area (in Ha.)
Kaohsiung, Tainan, Jia-I, Yunlin, and 11 others.	170
Longqi Plant (Tainan), Changbin Industrial Zone	300
Luchu Hsiang (Kaohsiung County)	28
Kangshan Chen (Kaohsiung County)	4
Taichung County (still looking for two sites)	4 - 10
Shalu Chen (Taichung County)	5.86
Niaosong Hsiang (Kaohsiung County)	1.3
Neimen Hsiang (Kaohsiung County)	80
Jenwu Hsiang (Kaohsiung County)	---
Total	Approx. 600

EPA will jointly set *Regulations Governing Management Assistance for Joint Clearance and Treatment Organizations*. Land set aside in industrial parks will be provided to set up emergency storage facilities for industrial waste from factories with no way to undertake treatment on their own or without a treatment organization able to undertake treatment for them. The EPA will also provide it's utmost to help with related administrative procedures.

The EPA has already begun drafting amendments to the *Regulations Governing Public and Privately Owned Waste Clearance and Treatment Organizations*. The amended regulations will remove certain already announced reusable industrial wastes and allow treatment technicians to undertake clearance jobs of an equivalent level with their treatment certification. However the most important addition is regulations for the establishment of pre-treatment storage sites. In other words, after an organization receives permission to install treatment facilities it may store wastes at a completed waste storage facility until the treatment facilities are completed, then proceed with treatment and dis-

posal. According to plans this will accommodate for 20 thousand tons of waste.

An official noted that out of the 6.03 million tons of general industrial waste, around 2.09 million tons is combustible and in the future will be mixed in and incinerated at the 15 BOO and BOT incinerators. The other 3.34 million tons of non-combustible waste will

be dealt with by assisting the private sector to set up of final disposal sites. A separate incinerator will be built to handle 600 thousand tons of organic waste sludge. Out of the 970 thousand tons of hazardous waste, firms will set up storage sites for 200 thousand tons and the EPA will assist industry to set up joint treatment systems for the remaining 770 thousand tons.



Technical Assistance for Industrial Wastewater Shows Results

Since 1998 the EPA has promoted a plan to diagnose, assist and inspect industrial water pollution. Over three years the plan will assist 2,339 enterprises and make 2,515 site visits. In 1998 and 1999 1,915 enterprises were assisted and 2,015 site visits made. Of these 1,382, or 72%, have the capability to meet effluent standards and reduce waterbody pollution if they faithfully operate wastewater processing facilities.

In 1998 the *Diagnosis, Assistance and Inspection Plan for Industrial Water Pollution* was promoted to improve the pollution of Taiwan's rivers and strengthen improvement assistance for factory water pollution control. For this effort the environmental engineering schools of many major universities were mobilized to form a group of experts and professors to assist industries with diagnosis and improvements. Over three years the group will assist 2,339 firms and make 2,515 site visits. As of this August the group had already completed assistance to 1,915 enterprises and made 2,015 assistance trips, primarily to industries, hospitals and meat markets.

Results of completed assistance to the 1,915 enterprises reveal that 236 (14%) need to undertake improvement projects, 792 (41%) have deficiencies but can make improvements on their own and 860 (45%) were without major deficiencies. Follow-ups by local environmental protection bureaus (EPBs) recorded that 1,382, or 72% of those assisted, completed improvements, including the 860 without serious deficiencies and 522 that completed improvements according to previous promises. If these industries faithfully operate wastewater treatment facilities they can meet effluent standards and reduce pollution to water bodies. Another 308 industries are in the process of carrying out improvements and their progress will continue to be monitored by local EPBs. According to reports by the industries mentioned above over 790 million NTD were invested for improvements, with a majority of this figure spent by the printing and dyeing, paper, and chemical industries.

These assistance efforts yielded a few special success stories. For example the Hsinchu Science park was able to use fluidized bed technology to turn their fluoride containing waste sludge into

relatively high purity calcium fluoride to use as flux for domestic steel-making furnaces. In another example, one domestic semiconductor industry began international cooperation on the recycling and reuse of copper containing wastewater that led to a 30 million dollar investment to upgrade pollution control equipment. Furthermore to stimulate application of new technologies, on 19 October 1999 the EPA will hold a seminar on high-tech industries wastewater treatment technology featuring speakers and technology from the Netherlands. The exchange between the Netherlands and domestic environmental engineering professionals will promote treatment technology for the crystallization of fluoride wastewater using a fluidized bed. The seminar will help firms with the treatment of fluoride containing waste to reduce the effects of fluoride in wastewater.

The EPA expressed that to ensure the success of assistance efforts they will press industry to self regulate and faithfully operate wastewater treatment facilities. The focus of assistance trips is to ascertain real waste sludge production and operating conditions. To ensure this the EPA asked industries to provide operating records and to truthfully and fully record amounts of waste sludge produced and regular operating conditions. Analysis of irregularities are made every month in conjunction with online reports required by the *Waste Disposal Act* and regular reports and permit applications as stipulated in the *Water Pollution Control Act*. Local EPB's are then charged to make an in depth investigation of enterprises with irregularities. Estimates are that by the end of December 1999 waste sludge production goals will have been set for all firms that have received assistance. The EPA expressed that it will continue to promote diagnosis and assistance and in the year 2000 will proceed with this work for 500 firms. To ensure continued assistance success the EPA will coordinate local investigation units to put into action plans for wastewater sludge inspections and follow-up controls on production amounts and treatment conditions of industrial wastewater sludge. Any violators will have to face up to stiff penalties.



Feature Article

Compilation of Agenda 21 Kicks Into High Gear

In order to keep abreast of global trends and articulate an Agenda 21 strategy, the EPA has finished compiling a draft of Taiwan's Agenda 21. The National Committee for Sustainable Development (NCSA) formed an ad hoc committee to build a consensus out of the opinions of various sectors. The committee will integrate the current rough draft with resolutions from related conferences and papers, and hopes to finish compilation of an Agenda 21 by the end of this year.

At the 1992 United Nations "Earth Summit" in Brazil, countries from across the world were called on to take part in drawing up plans for development and the environment in the 21st Century. The plans would promote the long-term goal of sustainable development in the next century and help foster international cooperation, economic development and global environmental protection. At the end of the Summit the gathered nations jointly presented "Agenda 21", an action plan for each country to promote sustainable development.

Taiwan is now ready to adopt "Agenda 21" as the highest policy-level document for guiding sustainable development into the future. After a long period of incubation, the first draft of the Agenda was completed in April 1999. The draft is divided into 4 sections and 36 chapters. The four sections — "Society and Economy", "Resource Conservation and Management", "Group and Individual Participation", and "Implementation Methods" — outline the direction of efforts for sustainable government.

After the completion of the initial draft the EPA

organized 23 conferences across the island to incorporate a wider range of ideas and opinions and revised the rough draft accordingly.

However, during the revision of the draft, a number of large-scale conferences were held (such as the National Energy Conference) addressing important social issues. The conclusions reached by these conferences are closely linked to principles of sustainable development. In addition, the National Sustainable Development Forum, organized by former EPA Administrator, Lung-Sheng Chang, recently proposed "Strategic Guidelines for Sustainable Development in the R.O.C."

In order to forge a consensus from these dissenting opinions, a recent meeting of the NCSA resolved to form an ad hoc Agenda 21 Committee to be headed by CEPD Council Member Chang. The committee will consider conclusions reached by national conferences on energy, land, water, welfare, agriculture, education and take into account the findings of various white papers to reappraise the long-term vision and strategy of sustainable development. The committee will also compile papers such as the "Strategic Guideline for Sustainable Development in the R.O.C." in the effort to come up with a consensus for Agenda 21.

The EPA estimates that the revisions will be done by December of this year. Then at the end of the year a national conference will be called to confirm the final contents of Taiwan's Agenda 21. 

EPA Asks Formosa Plastics to Come Up With Local Treatment Plan

Due to the difficulties of having a controversial batch of mercury-tainted sludge treated abroad, the EPA recently approved Formosa Plastics Corporation's (FPC) request to extend time limits for the domestic storage of the waste. They also requested FPC to come up with a local treatment plan within the week and that any future treatment must be submitted to outside supervision. However, local cries of opposition rang out making it clear that this incident will continue to smolder for some time to come.

The Formosa Plastics Corp. mercury sludge incident continues to generate controversy. On April 7, FPC shipped 357 containers of mercury tainted sludge back to Taiwan from Cambodia. The original plan called for the waste to then be shipped to the U.S. for treatment, however because of opposition from U.S. and international environmental groups, the U.S. EPA denied permission. FPC has since applied twice to the Taiwan EPA for storage extensions, once on June 6 and again for another 45 day extension before an August 5 deadline.

With plans for treatment abroad at a standstill and the Kaohsiung Harbor Bureau unwilling to allow unlimited storage of this waste sludge, when FPC applied for another extension the EPA in turn requested FPC begin drawing up plans for local treatment.

On August 5, EPA Administrator Hsung-Hsiung Tsai called a press conference to explain the EPA's principles on this matter. At the press conference Administrator Tsai stated that because plans for treatment abroad had run into difficulties it would be better to initiate local treatment plans than to put hope in future treatment abroad. In doing so, Taiwan would also be complying with the spirit of the Basel Convention — an international agreement concerning hazardous waste import, export and transshipment. For these reasons, while the EPA approved FPC's application to extend temporary storage of the mercury-tainted sludge at Kaohsiung harbor another 45 days, the EPA also requested FPC to come up with a detailed treatment plan and timetable. If during the extension period treatment

abroad becomes possible it would obviously not be ruled out. However, if Formosa Plastics truly wants to opt for local treatment it must comply with all applicable laws and the entire process must be submitted to supervision by environmental protection units (EPUs) and other impartial organizations.

The Director General of the EPA's Bureau of Solid Waste Control, Mr. Shu-chiang Fu, expressed that FPC has already applied to ship the mercury sludge back to Mailiao for temporary storage and plans to build a new burial site to treat the waste on their own. During talks with the EPA, FPC promised to provide treatment exceeding current standards. According to the talks FPC, will re-solidify the mercury sludge and then provide sealed burial. As for the possibility of opposition to local treatment, Director Fu stated that FPC must clearly address these issues in any local treatment plan proposed.

During this time FPC began making calls on envi-

ronmental groups in hopes of garnering their support. However, environmental groups criticized FPC for their irresponsibility in handling this affair. They also criticized the EPA for not shouldering responsibility and taking a stand on mercury waste treatment, thus sacrificing the EPA's initiative and role as the government authority on environmental matters.

At the press conference Administrator Tsai took special care to clarify outside criticisms of the EPA. He noted that throughout the entire course of events the EPA has continued to follow the incident's development. At the beginning the decision to look for treatment abroad was based on FPC's decision and similar requests from local and environmental groups. The decision to switch to local treatment, when treatment abroad was repeatedly delayed, is in fact the most responsible attitude. Moreover, based on the handling of this case the EPA can lay down a model for the future treatment of industrial wastes. 

More Northern Gas Stations Installing Equipment to Recapture Gas Vapors

To reduce emissions of volatile organic compounds (VOCs), the EPA has targeted gas stations to receive subsidies to install equipment designed to recapture gas vapors. Because China Petroleum Corp. (CPC) will promote installation of recapturing equipment in 100 stations during the next fiscal year, the EPA has focused efforts on strengthening awareness among private gas station owners. In the northern district installation rates have already climbed from 10% to 76%.

VOC pollution from gas stations has received serious attention from all circles. Because gas stations emit over 22 thousand tons of VOCs per year, in 1997 the EPA announced the *Guidelines for Subsidizing Installation of Vacuum Assisted Gas Nozzle Vapor Recapturing Equipment* to promote gas station pollution reduction. The Guidelines stipulate that the amount of subsidy is to be reduced yearly and given on a per-nozzle basis to gas stations that install vapor recapturing equipment on their own. As of June 1999, out of 1,769 privately owned gas stations nationwide 613 had already installed gas vapor recapturing equipment, a 35% installation rate.

According to the guidelines, gas stations already in existence can receive a 40,000 NTD per nozzle subsidy in the first year following announcement of the guidelines. The amount of subsidy will then be reduced by 10,000 per year with all subsidies ending in the year 2000. Newly built gas stations will receive a subsidy of 25,000 NTD per nozzle.

The EPA noted that throughout Taiwan, CPC has the greatest distribution of gas stations. CPC owns a total of 591 stations which on average each issue

28 kiloliters of gas per day, 1.4 times that of privately run stations. CPC's installation of recapturing systems severely lags behind that of privately run stations at 20% and will be a key focus of future dissemination efforts. However, CPC is a publicly owned corporation and any expenditures must therefore be budgeted well in advance. CPC has promised, however, to budget expenses to outfit 100 gas stations with vapor recapturing equipment in 2000 to raise installation rates.

Looked at by air quality region (AQR), of 249 privately run gas stations in the Northern AQR, 179 have already installed recapturing equipment, an installation rate of 72%. Of the 333 privately run gas stations in the Central AQR 100 have already been outfitted, an installation rate of 30%. And in the Yunlin—Jia-I—Tainan and Kaohsiung—Pingtung AQRs 47 and 58 privately run stations out of 213 and 197 respectively have installed recapturing equipment, installation rates of 22 and 29%.

An official pointed out that the primary sources of VOCs from gas stations includes loading of and escape from underground storage tanks and vehicle refueling. Addition of equipment to recapture gas vapors on pump nozzles can reduce around 90% of VOC emissions. This will reduce an estimated 10,343 tons of VOCs per year, or 45% of total yearly total gas station VOC emissions. Divided between the various AQRs there will be obvious improvements all around. The Northern AQR will cut VOC emissions by 4,511 tons, the Central AQR by 1,560 tons, the Yunlin—Jia-I AQR by 835 tons and the Kaohsiung—Pingtung AQR by 1,849 tons. 

Electronic Reporting System for Water Pollution Goes On-line

Following the establishment of an electronic reporting system for industrial waste the EPA recently announced guidelines for electronic reporting of industrial wastewater treatment. In the future, if industries want to make use of electronic reporting they can obtain a verification password from the EPA and then use email to submit reports. However before submission of reports, relevant written documents must still be signed by the person in charge and the person who filled out the report. Reports must also be kept on file for three years.

This year the EPA has committed a great deal of energy to promoting electronic reporting systems to make public service more convenient. The EPA designated industrial waste and five other items as priorities for electronic reporting. Following the completion of electronic reporting for industrial waste the EPA recently announced the *Guidelines for E-mail Reporting on the Operation of Sewage System Treatment Facilities and Effluent Water Quality and Quantity*. This officially begins electronic reporting for industrial wastewater.

However, industrial wastewater reporting is voluntary, as opposed to the mandatory electronic reporting of industrial waste. Industries can select whether to use traditional written reports or switch over to the new email-style reports.

According to the guidelines, data for email reporting includes monitoring reports on water quality and quantity for wastewater treatment facilities, electricity usage, and data on wastewater storage.

Industries wishing to use electronic reporting must

first visit the EPA's webpage to apply for a verification password and at the same time take the monitoring application form and agreement with the EPA and apply to the local environmental protection bureau (EPB). After receiving a letter of verification from the EPA they can then go to a designated webpage to retrieve their password. At this point the password can be used to submit regular reports.

However the EPA stressed that users of the electronic reporting system must still follow all regulations for written documentation. All places where it is required should be signed and stamped by the person in charge and the person who filled out the form. The company seal must also be applied and the report kept on record for three years. If documents are not available for inspection, the firm in question may still be fined for violating reporting regulations.

An EPA official pointed out that electronic reporting reduces reporting burdens felt by firms, as well as raises the efficacy of the agencies handling report information. Thus it is a "win-win" system for both industry and the EPA. At present, because it is still in the initial stages industries may not be able to feel the benefits of the system. However after a trial period, the EPA is confident that the majority of enterprises will be more than happy to make use of the electronic reporting system.

For detailed information on the new regulations please visit the Bureau of Water Quality Protection's webpage at: <http://simba.epa.gov.tw/water/> 

Noise Complaints Show Slight Increase in 1998

In 1998 nationwide public noise complaint petitions reached 20,278, a 2.23% increase over 1997. The focus of most complaints was factories and entertainment establishment. Looked at by region, Taipei City, Taipei County and Kaohsiung had the highest number of petitions. Due to the difficulties in investigating noise pollution violations, 85% of noise complaints were impossible to monitor or turned up no pollution source.

The EPA recently announced statistics for noise complaint petitions during the 1998 fiscal year. Compiled from all of Taiwan's counties and cities there were a total of 20,278 cases of noise complaint, an increase of 2.23% over 1997. This averages out to 9 complaints per 10,000 persons, 56 complaints a day, or 1 complaint every 36 minutes.

Looking at the frequency of complaints by region, Taipei City had the most complaints at 6,445 or 31.78% of the total. Taipei County ranked second with 3,933 cases or 19.40% of the total and Kaohsiung City came in third with 1,920 cases or 9.47% of the total. Fourth was Taichung City with 1,060 cases or 5.23% of the total. No other areas exceeded 1,000 complaints, while

Peng Hu County had the lowest number of complaints with only 16 for the entire year. As far as the frequency of complaints, Taipei City averaged 17.66 cases per day, Taipei County 10.78, Kaohsiung City 5.26, and Taichung City, Taichung County and Taoyuan County averaged between 2-3 cases per day. Peng Hu County and Taiwan's other 5 counties and cities averaged 1-2 cases per day while the remaining 11 counties and cities averaged less than 1 case per day.

Analyzed by noise source, factories and entertainment establishments were the chief focus of complaints at 7,124 and 5,203 respectively. These two combined accounted for 61% of all cases. Following these were construction projects at 3,428, loudspeakers at 2,462, and neighbors at 1,974. Complaints of noise from traffic or military installations were below 1%.

15,069 complaints, or 74.31%, were lodged during the day, with nighttime complaints accounting for over 42% of total complaints in only Taipei and Taichung City and 50% in Hualien County. The majority of complaints in the two places with the lowest number of complaints, Penghu County and Taitung

County, occurred during evening hours. Type II (residential use) and Type III (industrial, commercial and residential) control districts accounted for 96% of all complaints.

The EPA pointed out that 92.47% of complaints were made by telephone and 7.40% by written notification. 85.78% of cases handled either turned up no violation, resulted in an order to conform with standards, no way to monitor the disturbance or an inability to discover the pollution source. In 4.54% of cases a deadline for improvement was given and in 4.32% of cases both a fine and a deadline for improvement were issued.

Other statistics revealed that noise complaints have been rising yearly since 1989. There was a slight decrease in the number of cases in 1996 but with increases again in 1997 and 1998. However there was

only a 2.23% increase in 1998 compared with 14.91% in 1997, a decrease of 12.68 percentage points. Over the years factories and entertainment establishments have remained the number one and two focus of complaints, and construction projects has been number three except for 1988 and 1997.

Important to note is that in numerous government studies an average of 50% of the general public felt that traffic was the main source of noise pollution near their residence. Of these persons, an average of 31% expressed that the noise was difficult to endure. Oddly though, in nuisance complaints over the years traffic noise has consistently ranked second to last accounting for only 0.21% to 0.65% of cases. The EPA notes this is probably due to the fact that most traffic noise has no specific source. 

Recycling Rates in 100 Townships Should Hit 10% By the End of 2000

By the end of June 2000, the EPA plans to raise recycling rates in 50 townships to 10%. By the end of 2000 recycling rates in a total of 100 townships will be raised to 10%. This plan will establish an assistance task force and promote the establishment of recycling points and setting of recycling days. The assistance period will span from September 1st of this year to the end of December next year.

The EPA recently set ambitious work targets to push forward recycling efforts. The EPA plans within two years to raise recycling rates in 100 townships to 10%. To this end, on August 19, 26 and 27 the EPA called together public offices from local townships and cities for northern, central and southern regional working conferences on recycling. To support the promotion of this goal, the EPA has already formulated a draft of the *Principles for Assisting Township Government Agencies to Raise Resource Recycling Rates*, and will initiate relevant work items from September 1st of this year to the end of December next year.

According to the draft drawn up by the EPA, the work of raising township recycling rates will be divided into three stages:

1. Stage One: Raise recycling rates in 50 townships to 10% by the end of June 2000
2. Stage Two: Raise recycling rates in a total of 100 townships to 10% by the end of December 2000
3. Stage Three: Provide comprehensive assistance to raise recycling for townships nationwide

Actual articles to be recycled include items or containers already announced for recycling (including types of metals, glass, plastic, waste aluminum wrap, paper wrappings, discarded appliances, discarded computer equipment, discarded tires, etc.), articles encouraged for recycling (including styrofoam and paper lunchbox containers), and other articles that can be announced or listed (including waste paper, old

clothes, other types of metals, plastics and other appropriate recycling articles set by the EPA.). These recycling articles will all be included as components in calculating recycling rates. All township and city public offices should truthfully record recycling amounts for each article.

According to the EPA, the Assistance Task Force for the plan will be formed respectively from the EPA's Bureau of Performance Evaluation and Dispute Settlement, the Recycling Fund Management Committee, the Central Taiwan Division of the EPA, and county and city environmental protection agencies. Also, beginning in the middle and end of August, conferences will be called in the Northern, Central and Southern Taiwan Regions directed at the 100 townships to discuss in depth the current status of implementation efforts. In addition the EPA has already drawn up plans for extensive set up of recycling points in all counties and cities. Places selected for set up include:

1. School campuses, communities, government agencies and organizations within these jurisdictional areas. Set up goals will be met through regular visits by the local resource recycling vehicle, or by assisting local recycling businesses set regular visits to pick up recycling
2. Vendors required to install recycling bins and when necessary they will assist with follow-up recycling channels
3. Airports, bus and train stations and sightseeing areas

However, in response to the EPA's broad effort to promote recycling, local representatives attending the meetings pointed out that local township and city offices calculation of recycling rates is limited to the recycling amounts from clean up crews. Because they have no firm grasp on amounts from school campuses,

(continued on next page)

communities, government agencies and other organizations under their jurisdiction there is no way to estimate real recycling amounts. The EPA said that it has already begun investigation of recycling amounts for the above mentioned organizations. Beginning in July the EPA requested all counties and cities include recycling amounts for communities, school campuses, government agencies and other organizations. The EPA will also request educational authorities issue a memo to all school campuses to request their cooperation with the recycling policies of local EPBs. The EPA also pointed out that recycling amounts should be totally under the control of local township and city offices

and that the EPA can only play an advisory role.

To ensure that everything proceeds smoothly the EPA has already formulated a draft of the *Principles for Subsidizing Local Governments to Promote Resource Recycling and Waste Reduction*. One item in the draft is for subsidizing county and city EPBs and township and city offices to carry out work plans for resource recycling. The EPA will disperse funds to purchase related facilities and machinery according to regulations. All units receiving subsidies should turn in progress reports every half year during the work plan implementation period. Furthermore, at the end 2000 they must turn in a yearly total progress report. 

EPA Promotes Negotiations on Air Pollution Reduction with Four Northern Industries

After years of providing assistance and implementing control measures to improve air quality in the island's northern region, the EPA has negotiated emissions reductions with northern brick, ceramic tile, arc furnace smelting, and glass industries. The negotiations, aimed at speeding emissions reduction for these industries, are the culmination of previous assistance and review efforts.

The EPA has chosen to initiate negotiations with heavy industry and large pollution sources to reduce air pollution in accordance with a plan to improve air quality in Taiwan's northern region. The negotiations are aimed at reducing emissions and urging public and private firms to initiate emission improvements on their own. In the 1999 fiscal year, the EPA began the first round of talks with industries that emit a major portion of particulate matter pollution. These include the brick furnace, ceramic tile, and arc furnace smelting industries, as well as two firms in the glass industry.

An EPA official noted that in fact the EPA has separate air emission standards in place for the above industries. But although the proportion of factories installing pollution prevention equipment has risen due to previous efforts, air quality still needs to be improved. In addition to requiring that pollution emission quantities comply with legal requirements, the EPA has taken a step forward to initiate negotiations with large-scale factory owners in hopes of making even greater strides in emissions reduction.

As part of the negotiations, the EPA first visited the sites of major polluting factories to better understand current conditions. After compiling the results of previous assistance and review efforts, the EPA held a series of meetings to present these findings to the various industries. The EPA pointed out that factories were willing to cooperate as a result of the special negotiations but continue to be hindered by the complexity of large-scale installations and process upgrades. Goals for such improvements will, in general, have to be set for medium to long term time frames.

As for the brick and ceramic tile industry, the recent economic downturn has caused some

manufacturers to stop production. With several factories idle, 20,430 tons of particulate matter, 83 tons of SO_x, and 60 tons of NO_x have been reduced on an annual basis. If firms promise to meet reduction margins an estimated 3,606 tons of particulate matter, 62 tons of SO_x, and 11 tons of NO_x could be reduced yearly.

Negotiations with the arc furnace smelting industries were focused on factories in Taoyuan because of their large volume of particulate matter pollution. According to plans negotiated with three factories, particulate matter emissions can be reduced by an estimated 97 tons at a capital expenditure of about 13.46 million NTD.

Negotiations with the glass industry were carried out with two large factories located near air quality monitoring stations in Taoyuan county. Talks were centered around reduction of NO_x emissions. If the accords reached are executed successfully, around 13 tons of particulate matter and 245 tons NO_x could be reduced yearly.

The timetable for improvements vary for each industry. Improvements to production processes and equipment for the brick furnace and ceramic tile industries should be finished before December of this year. The arc furnace industries brought forward improvement plans this April and promised to make improvements in accordance with the timetable in the plans. Most of the industries selected upgrading of old equipment to cut emissions. Emissions improvements in the glass industry will need to take place in the medium to long-term because the furnaces used in that industry have a life expectancy of anywhere from between 8 to 10 years, and cannot be stopped during this time.

It is important to note though that starting in July of 2001 the EPA will tighten controls on NO_x emissions. The high emissions from furnaces in the glass industry will definitely be the main target of these controls. The EPA hopes that through these talks the glass industry will begin efforts to cut emissions at an early date. 

News Briefs

Regulations Loosened for Use of Tetrachloroethylene by Dry Cleaners in Residential Districts

To cope with difficulties faced by dry cleaning stores in complying with toxic substance control regulations, the EPA recently announced amended controls. Tetrachloroethylene used in dry cleaning machines will be left out of calculations of storage amounts for toxic chemicals. An official noted that according to regulations related to the *Toxic Chemical Substances Control Act* toxic chemicals may not be stored in residential or commercial districts. After this revision, although dry cleaners in residential and commercial districts can use tetrachloroethylene, they must still register use according to regulations. In this announcement the EPA also prohibited the use of trichloroethylene in household cleaning products.

Incentives for Reporting Violations of the Waste Disposal Act Proposed

The new *Waste Disposal Act* includes regulations providing rewards for persons who report violators of the Act. On August 5 the EPA brought forward a draft of specific regulations and invited all sectors to a public hearing. The draft stipulates that in the future members of the general public can report cases using letter, telephone or the internet. Depending on whether or not the reporter provides evidence he/she can receive either 5% or 10% of the net fine levied. The maximum amount possible to collect for a case is 500 thousand or 1 million NTD.

PET Bottle Industry Listed as Target of Next Wave of Recycling Audits

Starting in August the EPA targeted the container industry to station inspectors at their factories in an effort to determine true production numbers. The severe shortages in recycling fees turned in by PET bottle manufacturers made it the first priority for inspectors. The EPA has already compiled a list of firms suspected of under reporting to be targeted for the first wave of stationed inspections. If it is discovered that an industry has submitted false reports, the recycling fee that should have been turned in will be calculated according to the *Waste Disposal Act* a fine levied from one to five times that amount.

Glass Shards to be Cleared for Reuse in Public Construction Projects

To further the recycling of glass, the EPA on August 6 invited relevant units to discuss opening the way for reuse of waste glass in public construction projects. Because all units held a positive outlook on the subject the EPA will officially open up this reuse channel in the near future. The Public Construction Commission already expressed that in this fiscal year it will select

waste glass, concrete and others to promote goals for public construction resource reuse.

EPA Sets Goals for Electric Motorcycles for the Next Half Year

In addressing goals for the *Action Plan for the Development of Electric Motorcycles* in the second half of the 1999 fiscal year the EPA has already requested that all county and city EPBs compile budgets for promoting the use of electric motorcycles. For areas with larger numbers of motorcycles like Taipei and Kaohsiung City, the EPA has set the target number at 500, and for areas like Hsinchu and Miaoli County that have fewer motorcycles, the target number has been set at 200. According to EPA plans, in the next half year the EPA will push for a total of 7,600 new electric motorcycles. Coupled with the 5,000 bikes already in use, by the end of 1999 the total number of electric motorcycles should break the 10,000 mark.

First Wave of Energy Star Program Underway in September

In July EPA Administrator Hsung-Hsiung Tsai visited the U.S and signed the *Energy Star Program*. The Program is aimed at saving energy resources and reducing the greenhouse effect. According to an official, in September the EPA will select and implement priority plans for "Office Equipment". The EPA will follow the U.S. method and label selected copiers, computer processors, printers and other office equipment which qualify to bear the "energy star" label. All sectors will be encouraged to use energy saving lighting equipment, air conditioning systems and other products labeled as energy saving. The EPA will also promote energy saving construction materials and methods for business and industry.

Administrator Tsai Instructs the Central Taiwan Division of the EPA to Plan for Regional Environmental Management Bureau

When the Taiwan Provincial Government was downsized in July, the EPA originally planned to establish a Regional Environmental Management Bureau. However, due to indications from Premier Vincent Siew this idea was temporarily brought to a halt. On September 17 Administrator Tsai made an inspection of the restructured Central Taiwan Division of the EPA (formerly the Provincial Government's Department of Environmental Protection). While there, he instructed the Office Director to have foresight in drawing up personnel and work plans, in hopes that in the future the Office can move in the direction of setting up a Regional Environmental Management Bureau. Administrator Tsai's words are a clear indication that there remains a chance for the establishment of a regional center.

Study Released on Environmental Awareness in Taiwan

The EPA recently finished a study on students' and the general public's awareness of environmental protection issues. The study revealed that the public's level of knowledge about recycling fell with age, and that although 70% of college-level students could recognize the EPA's eco-label, the Green Mark, only 25% of students were willing

to give priority to Green Mark products in their purchasing habits.

In order to better understand students' and the general public's awareness about environmental protection and their recognition of and satisfaction with public

awareness oriented policies, in 1998 the EPA commissioned Tung Wu University to organize a study on the environmental awareness of students and the general public. The results of the study were recently released.

In the section dealing with air quality and noise pollution, the study points out that 37% of students and the public feel that there are unbearable levels of noise near their residence. For elementary, middle and high school students, 52%, 41% and 44%, respectively, felt the same. Of these, between 48% and 56% felt traffic to be the main cause.

As for resource recycling and trash disposal, 57% of the general public recognized the recycling symbol while close to 70% of college level, high school and middle school students could recognize the symbol. Also, 87% of elementary school students, the youngest group surveyed, recognized the symbol. When asked whether they knew of the government's effort to promote recycling, the general public ranked the highest at 91% while 87% of others surveyed said they were aware. When asked what "resourcable trash" was, the higher age groups were better informed with 78% college level students and 73% of the general public aware.

When asked about environmental education 45-86% said they got information about basic environmental protection from the television and newspapers. Over 40% of the public and college level students and 60% of middle and high school students said they also obtained information about the environment from publicity items about environmental activities.

In looking at the sources of drinking water for schools, the study showed that the proportion of students who drink school water rises according to age, from 49% of high school students to only 23% of

elementary students. Also, 67% of elementary students paid attention to the cleanliness of a water fountain before use, with more female than male students expressing concern with this point.

In the section pertaining to pollution, around 50% of both the public at large and college-level students felt that pig raising and factories were two serious sources of pollution to water resources and should be strictly prohibited. Second to these were trash dumps and the use of agricultural pesticides and fertilizers, with around 30% feeling that they should be prohibited. Additionally, 69% of high school and 55% of middle school students knew that "river pollution" means pollution to both the water and to the riverbed. Over 96% of students knew that dumping kitchen leftovers into drain pipes or ditches to increase the nutrients in lakes and rivers is wrong. 87% of high school students knew that septic tanks cannot go long periods of time without cleaning or else they lose effectiveness.

68% of college level students correctly identified the Green Mark, better than the general public's 50%. However, only 41% of college level students would give priority to purchasing a product with the Green Mark as opposed to 59% of the general public. Interestingly, public desire to purchase Green Mark products is higher than public recognition of the mark. Over 60% of the students and the general public were willing to apply for "environmental" credit cards (a fraction of the charge is donated to environmental activities) and over 70% were willing to participate in community environmental protection activities.

The EPA will continue to work to interpret the findings of the study and use them as a future administrative reference. 

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