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Environmental Protection Fundamentals Law Reviewed: Administrator Proposes 12 New Policies

On June 1st the Legislative Yuan began a review of the draft *Environmental Protection Fundamentals Law*. During the review, EPA Administrator Edgar Lin proposed 12 new policy directions. Due to the large scope of change, Legislators felt adjustments were required to the original draft. While the draft Law will not be recalled, only after a consensus on the changes is reached among the respective Executive Yuan agencies will the Legislative Yuan continue further review.

On June 1st the Legislative Yuan's Health, Environment and Public Welfare Committee and Judicial Committee called a joint meeting to review a draft of the *Environmental Protection Fundamentals Law* (環境保護基本法) proposed by the Executive Yuan. During the review, new EPA Administrator Edgar Lin gave a careful explanation of the drafts key administrative impacts.

The *Environmental Protection Fundamentals Law* defines principles for carrying out environmental protection in Taiwan. It is both framework and guide, and will be the mother act for all other environmental protection laws. Current environmental laws cover environmental impact assessment, air pollution control, water pollution control, waste disposal, noise pollution control, drinking water management, national parks, water resource use, forests, and regional planning. However, many of these laws fall under the jurisdiction of different regulatory agencies.

Over twenty years have expired since the original review of the draft *Environmental Protection Fundamentals Law*. From May of 1988 to March of 1990 the Legislative Yuan reviewed the draft Law four times, but have not deliberated it since. In 1996 the Legislative Yuan agreed to recall the draft Law to allow the EPA to reformulate it.

In Administrator Lin's report to the review committee, he stressed, "a country's ability to improve environmental problems depends entirely on whether or not the ruling party has the political resolution to improve the environment. Political resolution to improve the environment is manifested in legislation of the *Environmental Protection Fundamentals Law*." To encourage commitment to environmental protection, Dr. Lin proposed an additional 12 new policy directions for consideration during the legislative process.

The twelve policy directions include:

1. Expand and fairly distribute the environmental protection budget among government

agencies. Priority should be given to supplementing environmental protection efforts in remote or special regions

2. When delineating restrictions on activity or usage in certain areas in order to protect the natural and social environment, government agencies should fully ensure the rights of Taiwan's aborigines

3. To preserve the sustainable use of environmental resources, remediation fees should be collected from those damaging the environment

4. To improve environmental quality, construction of public environmental protection facilities should be strengthened, including construction of industrial waste treatment facilities

5. International environmental activities should be promoted to help protect the global environment

6. Government should provide beneficial measures to assist in the development of NGO environmental groups

7. Government should adopt preventative measures and health care to lower environmental health risks and occurrence of diseases linked to environmental conditions, such as cancer, heart disease, lung disease, itai-itai disease, and black foot disease

8. Strengthen the powers and responsibility of local environmental protection agencies by giving governments the authority, resources, and assistance necessary to implement self governance at the local level

9. Establish a national environmental quality advisory council, as in the US presidential office, as the highest advisory body for national environmental policy

10. Burden of proof should be shifted to the polluter rather than the victim in environmental disputes

11. Concrete prevention measures should be taken to prevent health effects from radiation or nonionizing radiation in all environmental mediums, such as air, water, or soil

12. Government should consolidate environmental research, development and demonstration projects from different agencies to avoid a waste of resources.

The EPA stressed that the new policy directions proposed do not deviate from the concepts contained in the original draft of the *Environmental*

Protection Fundamentals Law. However, the Legislators involved felt the scope of change to be too great and were unable to accept this explanation. While the draft Law will not be formally

recalled to the Executive Yuan, the EPA must consolidate the views of respective executive agencies on the changes, at which time the Legislative will continue review of its contents. ♻

Environmental Services Industry Urged to Prepare for WTO Accession

With Taiwan's accession to the WTO approaching, the EPA has been evaluating the anticipated impact liberalization will have on the environmental services industry. The EPA expressed that due to the early liberalization of this sector, free and open competition will likely have a limited impact on the domestic environmental services industry.

As a condition of accession to the World Trade Organization (WTO), Taiwan promises to open 11 major service industry categories, including 100 different service industry types. The EPA has indicated that Taiwan has committed to the scheduled liberalization of several environmental protection related industries, including wastewater services, solid waste treatment and disposal, sanitation and related services, waste gas treatment, noise improvement services, and nature and scenic area conservation services. Following WTO accession, foreign firms will be allowed to freely setup offices in the Taiwan area for the provision of environmental services.

In other words, "most-favored-nation treatment" (i.e. equality across all member nations) and "national treatment" (i.e. equality between local and foreign enterprises), which are two of the fundamental principles of the WTO, will allow foreign firms to compete alongside local firms in a range of different areas. Such liberalizations would include the provision of wastewater treatment equipment, boilers, settling tanks; garbage and industrial waste collection, hauling, incineration, and other forms of disposal; factory and vehicle emissions monitoring

and control services; waste, fertilizer, recycled products wholesale trade, etc.

At a May 31 EPA-sponsored seminar entitled "The Effects of WTO Service Sector Liberalization on Taiwan's Environmental Protection Services Industry," the EPA's Office of Science and Technology Advisers pointed out that Taiwan's commitments will not heavily impact the island's domestic environmental services industry, largely due to the fact that to date Taiwan has not had significant restrictions on foreign participation in this industry sector. Before WTO accession foreign firms were already allowed to establish operations in Taiwan. The only requirement for firms that do set up shop in Taiwan is that they must abide by local environmental regulations, professional licensing requirements, and emissions standards.

Officials in the Executive Yuan's Council of Economic Planning and Development stated that Taiwan entered negotiations with other nations between July 1994 and the middle of 1998. During the multilateral negotiation process, environmental services sectors in more advanced countries such as the US and Europe had a larger number of requests, while those in developing countries had fewer opinions. In terms of the effect on Taiwan's labor force, there should not be an influx of "foreign environmental laborers" taking jobs from local residents. As foreign firms enter Taiwan, only higher level managers and professionals will be brought in. The effect on the island's services market should therefore be relatively light. ♻

Water Pollution Fee Slated to Begin in 2002

To improve the quality of Taiwan's water bodies, Administrator Edgar Lin instructed the EPA to draw up plans to begin collection of the water pollution fee. To coordinate with budgeting schedules, collection of the fee will most likely begin in 2002. Initial efforts will be directed at industrial sources of water pollution to reduce the impact of fee collection on the public. Funds collected will be used for water pollution remediation work. In preparation, the EPA has stepped up research on matters

regarding fee collection.

EPA Administrator Edgar Lin recently pointed out that the long delayed water pollution fee will most likely begin collection from industrial water pollution sources in the year 2002. Funds collected will be used mainly for river basin remediation. Administrator Lin stated that there is a legal basis for

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collection of water pollution fees based on the "polluter pays" principle. Although the EPA has already released fee collection regulations, the implementation date will be set so as to avoid creating too much pressure on private enterprise. For this reason, Administrator Lin instructed the EPA's Bureau of Water Quality Protection to perform a further review of all relevant plans before the end of this month.

Administrator Lin stated that although collection of the water pollution fee is perfectly justified, there are a number of reasons implementation has not begun. For example, existing regulations restrict the use of water pollution fees mainly for construction of sewerage systems. The regulations stipulate that 2/3 of local sewage construction costs would be supplemented by the central government from the water pollution fee. Administrator Lin, however, pointed out that even with such a large supplement, local governments still lack the personnel and funding to complete the job. It is precisely for this reason that the sewerage hookup rate in Taiwan still lags severely behind that of advanced countries. Instead, future collection of water pollution fees will be used mainly for remediation of river basins, such as the Er Jen and Kao-Ping rivers.

Administrator Lin also addressed the decision to collect the fee initially only from industrial sources and not from individual households. The

Administrator expressed that in consideration of equitability, the public should not bear too large a burden too quickly. Even if existing regulations are not amended, fee collection will begin first with industrial enterprises. However, the EPA will work with the Ministry of Economic Affairs to reformulate the fee rate. At the present date it is already too late to include the water pollution fee in the 2001 budget. As a result, collection of the water pollution fee will most likely begin in 2002.

Legislator Jao Yung-ching (趙永清) recently stated that Article 11 of the *Water Pollution Control Act* provides the legal basis for collection of the water pollution fee. However, Article 11's mention of, "those that release waste or effluent water to surface water bodies," does not clearly indicate from whom the fees should be collected. Legislator Jao then pointed to Article 41 to show that collection of a water pollution fee from individual households is not in accordance with the Act. In addition, he further indicated a questionnaire study by the Environmental Quality Protection Foundation and other academic opinions showing that the fee should be collected first from industrial sources. Legislator Jao also noted that use of water pollution fees for sewerage construction is not sensible, and that he would work with other legislators and the EPA to revise the *Water Pollution Control Act* to specifically target fee collection from industrial enterprises and sewerage systems. ☻

EPA Holds Soil and Groundwater Pollution Remediation Forum

After promulgation of the *Soil and Groundwater Pollution Remediation Act*, formulation of related tier 2 regulations was contracted out to a number of consulting organizations. The EPA recently held a forum to consolidate the work being done by contractors and to solicit opinions from other related groups. Draft laws will be proposed before the end of this year.

Although the *Soil and Groundwater Pollution Remediation Act* was promulgated on February 2, 2000, a large task remains unfinished. To prepare a comprehensive framework to implement soil and groundwater protection, on June 15 the EPA's Bureau of Water Quality Protection and Bureau of Solid Waste Management jointly held the "Millennium Series (No. 4) Forum on Groundwater Pollution Control."

The focus of the forum was the status of supporting (or tier 2) regulations related to the *Soil and Groundwater Pollution Remediation Act*. Main

topics included: baseline monitoring and control standards for soil and groundwater pollution; regulations regarding site investigation, remediation evaluation, and control sites; composition of remediation and control plans for contaminated sites, criteria for setting remediation goals, and related implementation guidelines; as well as the soil and groundwater pollution remediation fee.

After promulgation of the mother act, the EPA contracted a number of outside organizations to compose relevant tier 2 regulations. These regulations are to form a comprehensive pollution remediation mechanism on which to base future policy implementation efforts. During the June 15 forum, a number of important tier 2 regulations were brought forward. For example, monitoring baselines and control standards, as mandated by Article 5 of

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Industrial Pollution Control Investments Top 15 billion in 1998

The EPA has completed statistics on factory investments and operation and maintenance expenditures for pollution control equipment in the 1998 year. The statistics show that in 1998, a total of NT\$15.5 billion was invested by enterprises in pollution control equipment, or 3.2% of total fixed investments. This represents growth of 7.3% from 1997. Among the different industries, electrical and electronics, chemical materials, basic metals, and foodstuffs were the largest investors in pollution control equipment.

The EPA recently released a statistical analysis of factory investments and operation and maintenance expenditures for pollution control equipment. A total of NT\$15.52 billion was invested in pollution control equipment in 1998, or 3.2% of total fixed investment costs. Although this represents an investment increase of 7.33% from 1997, or NT\$1.06 billion, the ratio to total fixed investment costs is the lowest since 1988. By sector, 30.47% of investments were made by the electrical and electronics industries, at NT\$4.73 billion, an increase of 50% from the previous year. Operation and maintenance (O & M) expenses reached NT\$13.64 billion, a drop of 4.41% from 1997. In this category as well, the electrical and electronics industries were the biggest spender, at NT\$2.5 billion.

The EPA Statistics Office stressed that although 1998 finally breaks the trend of falling investments in pollution control equipment begun in 1993, the trend of steady increases in O&M expenditures was also reversed. In 1997 investments dropped but O&M expenditures went up, mainly because most factories that required installation of pollution control equipment had already done so. The reason behind the rise in investments and drop in O&M in 1998 is still being researched, and is a trend to be watched.

The statistical study, which was contracted to the Industrial Development Bureau, showed that of the total NT\$15.52 billion in equipment investments,

7.99 billion went for waste water treatment and 5.85 billion for treatment of waste gases. These two items alone accounted for 89% of all investments. The leading four investing industries were electrical and electronics at 30.47% (NT\$4.7 billion), chemical materials at 15.49% (NT\$2.4 billion), basic metals at 10.62% (NT\$1.6 billion), and foodstuffs at 10.35% (NT\$1.6 billion). Privately run enterprises invested a total of NT\$13.47 billion, or 86.78% of the total, an increase of 18.51% over the previous year and the highest total percentage in four years. State owned industries invested a mere NT\$2.05 billion, or 13.22% of the total. This marks a 1/3 decrease from 1997, and is the lowest since 1988.

According to figures from over the past years, investments in wastewater treatment equipment have been the consistent leader, with the exception of 1995 when wastewater was overtaken by investments in air pollution control equipment. Before

1993 the top three investors were the petroleum and coal products, basic metals, and chemical materials industries. In 1995 electrical and electronics moved into third place, and in 1997 took over the number one spot, which it held this year as well. This year investments by the electrical and electronics industries in pollution control equipment accounted for over 30% of the total, a 50% increase over 1997.

In terms of O&M expenditures, NT\$13.6

billion represents a decline of 4.41% from 1997. O&M expenditures exceeded NT\$1 billion in the following industries: electrical and electronics at 2.5 billion (18.36%), basic metals at 1.95 billion (14.26%), chemical materials at 1.89 billion (13.88%), and textiles at 1.54 billion (11.27%). State owned enterprises accounted for NT\$0.99 billion, or 7.26% of the total, while O&M expenditures by private enterprises ran NT\$12.65 billion in 1998, a dollar ratio of almost 1 to 13 between state owned and private enterprises.

Year	Total Investment in Pollution Control Equipment	O&M Expenses
87	6,962	3,888
88	20,134	6,855
89	20,056	9,401
90	21,384	10,515
92	30,277	12,075
93	28,342	11,675
94	18,823	11,532
95	18,489	13,828
97	14,460	14,269
98	15,519	13,639

Feature Article

EPA Promotes Cross District Waste Treatment at Large Scale Incinerators

Construction of Taiwan's large-scale incinerators is gradually nearing completion. By the end of the year 17 plants will be under operation, bringing the island's incineration rate close to 60%. In conjunction with the pace of incinerator construction, the EPA will readjust waste service districts to more fully utilize any excess capacity. In the future, waste treatment will be carried out on the principle of integrating district operations, lowered capital and improved efficiency.

Progressive completion of Taiwan's large-scale incinerators has greatly increased local waste treatment capacities. Besides promoting facility installation, the EPA is also gradually readjusting waste treatment policies to maximize efficiency of incinerator use.

At present, there are 10 large-scale municipal incinerators operating in Taiwan, including Neihu, Mucha, and Peitou (Taipei City), Hsintian and Shulin (Taipei County), Taichung City, Tainan City, Chiayi City, and the South and Central Districts in Kaohsiung City. Total daily incineration capacity is around 10,000 tons. The EPA estimates that within this year 7 other plants, in Pali (Taipi County), Hsinchu City, Houli (Taichung County), Hsichou (Changhwa County), Jen-wu and Kangshan (Kaohsiung County), and Kanting (Pingtung), will officially come online.


According to EPA plans, excess capacity from plants with treatment quantities below installed capacity will be used first for the treatment of municipal waste from outside the incinerators original service district. Priority will be given to townships, villages or cities within the county jurisdiction that fall under either red light (use of local treatment facility limited to one year), or red-yellow light (local treatment facility under construction) conditions. If there is still excess treatment capacity remaining, red or red-yellow light special municipalities or large cities outside the county will be given priority for treatment.

To promote incineration as primary waste treatment method and landfill as auxiliary treatment method, the EPA will raise the administrative responsibility for

waste treatment from the district to the county level. By creating a more regional perspective for waste treatment, excess capacity at large-scale incinerator plants can be used to create an economy of scale, lowering incineration costs and avoiding redundant investment in waste treatment facilities.

Officials pointed out that the EPA has successfully assisted three plants at Houli (Taichung), Hsichou (Changhwa), and Kanting (Pingtung) to complete readjustment of their service districts. Readjustment resulted in increased daily incineration amounts totaling 800 tons. The EPA also assisted the Jen-wu plant (Kaohsiung) to arrange cross district treatment of waste from townships in Tainan County, and assisted the Kangshan plant (Kaohsiung) to accommodate municipal waste from Yongkang City (Tainan County) during trial operations.

The EPA observes that local residents and government should abandon selfish NIMBY (Not In My Back Yard) attitudes opposing all incinerator construction. Cross district waste treatment is mutually beneficial, and if one day large-scale incinerator operations can create an economy of scale incineration fees will lower. For this reason, the EPA will continue to promote readjustment of incinerator service districts and cross district treatment.

The EPA's Central Taiwan Division (中部辦公室) remarked that they will continue to promote service district readjustment in conjunction with the pace of incinerator construction. In addition, there are plans for construction of cross district sanitary ash landfills based on an existing three phase trash disposal plan for the Taiwan area. The landfills would be used during downtime for yearly incinerator maintenance, waste disposal during natural disasters, and incinerator ash disposal. In addition, the EPA will assist county and city governments to set management regulations on which to base operation of district waste treatment facilities. 

Edgar Lin Stresses New Gov't to be Transparent and Efficient

In a meeting with representatives of the American Chamber of Commerce, EPA Administrator Edgar Lin pointed out that raising efficiency will be the priority for his new administration. During his tenure, Administrator Lin will strongly push for a resolution to the problem of industrial waste, in part by providing adequate incentives to attract investors to build treatment facilities. Adminis-

trator Lin also emphasized his commitment to an open, transparent EPA, and his willingness to hear criticisms or suggestions from all parties.

On June 20 a delegation from the American Chamber of Commerce's Environmental Protection Committee and the Taiwan Responsible Care As-

sociation visited new EPA Administrator, Dr. Edgar Lin, Ph.D. The delegates expressed their concern over environmental affairs and their willingness to participate in environmental policy development.

After welcoming his guests, Administrator Lin stressed to them his commitment to solving the problem of industrial waste. The Administrator pointed out that after Taiwan's incinerator projects all come online, the problem of municipal waste disposal will for the most part be resolved. However, industrial waste remains a thorny issue that the new administration must come to terms with. Administrator Lin noted that the EPA would continue to use excess incinerator capacity to treat some portion of general industrial wastes. In addition, to improve investment prospects for the construction of industrial waste treatment facilities, the Administrator instructed EPA personnel to come up with adequate economic incentives during their research on a new industrial waste plan.

American Chamber of Commerce delegates expressed their desire to establish a permanent communications channel with the EPA to regularize the flow of information, for instance in regards to regulatory changes or public hearings. The representatives further expressed their interest in soil and groundwater pollution regulations, and their opposition to the monetary reimbursements often included in "environmental protection agreements" made between industries and local parties.

In response, the Administrator pointed out that the EPA's publication of the **Environmental Policy Monthly** provides regular updates on domestic environmental policy for the foreign business community. In addition, after implementation of the

Administrative Procedures Law (行政程序法), all EPA regulatory revisions must abide by specific criteria. These criteria should offer sufficient opportunity for all parties to participate in the regulatory process.

In terms of reimbursement mechanisms, the Administrator pointed out that reimbursements can be divided into two types. Dr. Lin stated his adamant opposition to the first type, where factories use money to buy off local residents at the expense of the environment. As for the second type, when factories have done a good job at protecting the environment but would like to give reimbursements to improve local relations, Dr. Lin is not opposed.

In addition, the Administrator expressed his support for voluntary industry improvement programs, such as the Responsible Care initiative. He also recommended greater participation from NGO environmental groups in such programs, stating that NGO participation would give industry participants greater credibility with outside parties.

At the end of the meeting, Dr. Lin stressed the new administrations greater ability for change due to its lack of past burdens. Administrator Lin expressed hopes that this "clean start" will enable the EPA to improve efficiency. In addition, he pointed out the importance of fighting corruption in the new administration. If any corrupt environmental officials are discovered, the Administrator stated that he would move swiftly and enact a stiff punishment. Dr. Lin noted that protection of the environment requires contribution from all parties. In this spirit, creating a more open, transparent EPA will help to foster broader participation in the effort to protect the environment. ♻️

Administrator Explains His Stance on Taiwan's Fourth Nuclear Plant

In a recent explanation of his stance on construction of Taiwan's fourth nuclear power plant, EPA Administrator Edgar Lin stated that previous policy decisions surrounding the plant were not made in an open manner, and that he therefore opposed the construction of the facility. Administrator Lin stated that he would respect the results of a current reevaluation of the facility no matter the outcome. Lin further emphasized that because the previous environmental impact assessment was biased, and due to the unresolved problem of radioactive waste treatment, the EPA is currently considering whether to require the planned facility to undergo another EIA.

Due to recent political disputes over the fate of Taiwan's planned fourth nuclear power plant (hereafter referred to as "Plant 4"), the Legislative Yuan has been actively questioning administration

officials on the topic. On May 25, EPA Administrator Edgar Lin visited the Legislative Yuan's Health, Environment and Public Welfare Committee to report on the future direction of the EPA. During his report, Lin explained that his longstanding opposition to Plant 4 grew out of his opposition to what he perceived as a "dictatorship." Due to the recent victory of opposition candidate Chen Shui-Bian as president, however, Lin argued that the dictatorship no longer exists, and that he thus no longer steadfastly opposes Plant 4.

Questions over the meaning of Lin's statement prompted him to offer clarification the following day. He stated that by "dictatorship" he meant the

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decision-making processes regarding Plant 4. He pointed out that he opposed Plant 4 because the processes were neither open, fair, nor democratic, not because of an administrative dictatorship. If future decisions regarding Plant 4 are made in an open and transparent manner, Lin will accept the results, whatever they may be. He remains very concerned, however, over the enormous decommissioning costs the plant will entail at the end of its life.

Lin also stated his opinion that Plant 4 should undergo another environmental impact assessment (EIA). He supported this suggestion with several claims. First, Lin considers the findings of the previous EIA to be biased. The job of an EIA review committee, he argued, is to review an environmental impact report, not issue an opinion. Second, waste from Taiwan's other nuclear plants have still not been subject to final treatment and disposal. Plant 1 is currently storing more than 29,000 barrels of waste, while Plant 2 is temporarily storing on site over 32,000 barrels. The US and Europe no longer have the capacity to treat nuclear waste. In Taiwan, the problem of treatment is magnified by the island's high population density and shortage of land. Moreover, economically advanced countries such as the

UK and the US no longer build nuclear power plants due to factors such as waste treatment costs and safety concerns. Lin asked, in light of these trends, if it was not strange that Taiwan should be pursuing a fourth plant.

Lin also refuted the argument that Taiwan needs nuclear power to reduce carbon dioxide emissions. He pointed out that Taiwan's development policies still permit development of large industrial facilities, such as the Bing-Nan Industrial Complex and the Eighth Naptha Cracker, which if completed would be very large sources of CO₂ emissions. Taiwan's industrial structure must be readjusted to resolve this contradiction.

Lin emphasized that Taiwan's energy policy should follow a "small is beautiful" path that utilizes energy from multiple renewable sources. Constructing a fourth nuclear power plant would be a step back from the goal of energy source diversification and could have a serious impact on the island's environment. Plant 4 would derail alternative energy projects, and built rashly could entail even greater future costs. For these two reasons, Administrator Lin hopes to begin a new EIA for the facility. He repeatedly emphasized that any future EIA process must be open and transparent. 

Formosa Plastics to Roll Out Domestic Treatment of Mercury Sludge

After repatriating its mercury-tainted sludge from Cambodia, Formosa Plastics Corp. put forth a domestic treatment plan and engaged local residents in communication. As a result, the Kaohsiung County government has finally allowed the company to ship the sludge to FPC's Jen-wu facility for treatment. In addition to urging improved waste monitoring activities, EPA Administrator Edgar Lin also called on Taiwan manufacturers to take greater responsibility, and thereby avoid unnecessary costs to themselves and the greater society.

The Kaohsiung County government has agreed to allow the Formosa Plastics Corp. (FPC) to return a batch of mercury-tainted sludge to its Jen-wu facilities for treatment. Return of the waste to Jen-wu marks the end of a saga that has caught international attention. EPA officials indicated that FPC will provide a NT\$10.8 million "good neighbor fund" to be used for environmental protection purposes by the Jen-wu township. EPA Administrator Edgar Lin emphasized that the FPC case represents a conclusion to long-standing disputes, but is also the beginning of a new phase.

Following the international attention garnered by FPC's shipment of mercury-tainted sludge to Cambodia in late 1998, FPC shipped the sludge

back to Kaohsiung Harbor in April, 1999. According to the international Basel Convention, after arriving in Kaohsiung Harbor the wastes should have been shipped back to their point-of-origin, the Jen-wu township. However, local concerns kept the wastes in Kaohsiung Harbor for 14 months, until June 24 when this batch of nearly 4,500 tons of mercury-tainted waste was successfully shipped back to FPC's Jen-wu plant. With the return of the waste to Jen-wu, Administrator Lin indicated that all administrative elements of the treatment process - including approval of the test-burn and final treatment plans - will be the responsibility of the County government. In terms of overall monitoring, the EPA will cooperate with Kaohsiung County, Jen-wu township, and public interest groups to watch FPC's post-treatment handling of the waste. It's hoped that this process will set a positive precedent.

On June 8, Administrator Lin and the Kaohsiung County Chief released a statement and held a press conference to issue a joint explanation of it's contents. The statement explains that FPC's treatment plan reflects extensive communication carried out with local residents in good faith. By

ameliorating local concerns, and through a four-point agreement statement issued by the Jen-wu Pollution Oversight Committee, the County government does not in principle oppose treatment of the sludge at FPC's Jen-wu facility. The County will, however, closely watch, and even videotape, the entire handling process.

Lin expressed his appreciation for the support of the County government in bringing this drawn-out dispute to an acceptable close. He pointed out that the entire case has given everyone involved an important lesson in how environmental protection activities should be handled. He emphasized that unless Taiwan manufacturers take greater responsibility in handling their environmental affairs, they will incur great costs to themselves and society

as a whole. Moreover, the support of the county government and the Jen-wu township Pollution Oversight Committee should set a good precedent for future multi-agency cooperation efforts.

Currently only about 58% of Taiwan's industrial waste is treated properly. Projections show that by 2004, domestic industrial waste production will reach 21.6 million tons. Of this, 1.78 million tons will be classified as hazardous waste. Administrator Lin pointed out that new industrial waste treatment policies will be announced within the next six weeks. He stated that the EPA will fully support the Ministry of Economic Affairs' listing of industrial waste treatment facilities as a key domestic industry. He further expressed hope that this move would eradicate Taiwan's industrial waste problems. ♻

Administrator Lin Urges Consumer Habit Change

In preparation for World Environment Day, the EPA announced the results of a WWF 1998 report. The report showed that Taiwan's environmental consumption pressure was 2nd in the world. Administrator Lin indicated that the report should act as a warning, and in addition to urging Taiwanese to change their consumption habits, he also stated that the report will become the basis for future regulatory measures.

In the lead up to World Environment Day, EPA Administrator Edgar Lin called a June 3 press conference, during which he announced the 1998 results of a "Living World Report" published by the World Wildlife Fund (WWF) and highlighting the environmental performance of 151 countries. The report ranked Taiwan as having the second highest environmental consumption pressure per capita in the world.

The EPA's Office of Science and Technology Advisers (OSTA) indicated that the WWF report is the first statistical analysis of the pressures consumption patterns have on the earth's environment. The 1998 report indicates that since 1970, the earth's living resources have declined by 30%. One-third of the planet's natural resources have been lost, and the amount lost is increasing by 5% every year.

The WWF has calculated the impact on ecosystem resources that consumption habits in different countries have (this is called a "consumption pressure index"). The report calculates the Taiwan average per capita value to be 3.42 times the world average, second only to that of Norway at 4 times the world average. Officials have pointed out that if fresh water extraction were considered in the analysis, Taiwan would prob-

ably rank at the top of the list.

Administrator Lin said that the WWF is the world's largest environmental conservation organization, and that the 1998 report analyzes the state of the earth's environment. He further indicated that for many years Taiwanese emphasized that the island's environmental problems were worse than other countries due to rapid industrialization and high population density (the world's second highest). Calculated per square km, Taiwan's environmental loading is among the highest in the world.

The WWF report shows, however, that even if one eliminates the factor of high population density, Taiwan's per capita consumption levels are still second in the world and heavily impact the natural environment. Even though this method of calculation is still controversial, the results nonetheless warrant pause for reflection. In reaction to the report, an OSTA official said, we "must adjust both our ways of thinking and ways of living."


Lin pointed out that this report should serve as a warning to the people of Taiwan. He stated that Taiwanese should improve several key elements of environmental management, including consumption patterns and national environmental policies and planning, such as restructuring of the manufacturing and construction industries, and national land planning. Because consumption habits of the general public are a major cause of environmental degradation, the EPA is planning to apply new concepts to address environmental problems as opposed to focusing only on traditional pollution prevention and control. ♻

(continued from page 4)

the mother act, and regulations for soil and ground-water pollution remediation control areas, as stipulated in Articles 12 and 14. Guidelines for formulation of remediation goals as mandated in Article 17 were reported as well as regulations related to Article 22 regarding collection of pollution fees.

In addition to listening to reports from contractors, the EPA also invited academics and industry representatives to participate in hopes of including

opinions from all sectors during initial formulation of the laws.

An EPA official noted that in terms of monitoring progress on related topics, contractors will hold further individual academic / expert meetings as well as public hearings. In addition, in mid-July, the EPA will hold forum number five to collect and exchange more information and opinions. It is estimated that by the end of the year 2000 the above regulations will be finished and ready to act as a basis for future policy implementation. 

EPA Lists Industry BACT Guidelines in Support of Total Emission Quantity Controls

Taiwan's emissions total quantity control (TQC) policy is slated to take effect in the near future. In support of its implementation, the EPA has proposed "best available control technology" (BACT) guidelines for various industries. On May 30, the EPA invited industry representatives to a discussion on guideline contents. According to the EPA's proposal, the scope of the guidelines includes 25 industries and 57 manufacturing processes. In TQC areas, when installing or upgrading facilities, firms in specified industries will be required to utilize BACT.

In preparation for the January 2003 launch of Taiwan's air pollution total quantity control (TQC) activities, the Kao-Ping and Central regions of the island were chosen to run demonstration TQC programs this year. The TQC program requires firms that are installing new or upgrading old facilities to utilize the "best available control technology" (BACT). In this regard, the EPA has already drafted a list of the technologies required.

The list recommends ten types BACT, as well as optimal treatment efficiencies for their operation for 25 industry sectors and 57 manufacturing processes that emit air pollutants. Officials have indicated that in the future the EPA will formally announce the industries legally required to utilize recommended BACT.


The EPA revealed that the 25 industries targeted by the BACT list include petrochemicals, semiconductor manufacturing, cement, asphalt mixing, brick and tile, and steel. The EPA has also analyzed technologies for 57 production processes and pollution sources within these industries – for example, the steel industry's arc furnace, heat furnace, and reaction furnace were considered. Major air pollutants targeted include volatile organic compounds (VOCs), particulate matter, oxides of

nitrogen (NO_x), and oxides of sulfur (SO_x).

Taiwan's *Air Pollution Control Act* defines BACT as the most effective pollution control technology once energy, environmental, and economic impacts have been taken into account. Moreover, the technology must be commercially available. Article 6 of the Act stipulates that within class three control districts (areas where air quality standards are not being met), newly established or upgraded stationary pollution sources must comply with specified emission quantities. These sources are also required to utilize BACT and cannot exceed allowable increase limits. Under the operation of the BACT policy, pollution emissions can be controlled down to the lowest possible level.

Considering another example, that of semiconductor and wafer package manufacturing, the EPA's BACT list requires firms in these industries to achieve VOC reduction levels of 90%. The best available control technologies in this case would be two different types of incineration techniques.

Of the 11 types of manufacturing processes or pollution sources within the petrochemical industry, the EPA has targeted three types of pollutants: NO_x , SO_x , and VOCs. Recommended technologies include 16 types, such as using natural gas as fuel and low- NO_x burners.

The EPA's Bureau of Air Quality Protection and Noise Control points out that concerned industries and agencies were invited to a public hearing on May 30. The BACT list contents will be announced after a final confirmation. In the near future, the Kao-Ping and Central air quality districts will implement demonstration TQC programs. This pilot-phase will provide a model for future wide scale implementation of the TQC policy. 

Industrial Waste Policy Under the Gun

A serious lack of industrial waste treatment facilities confronts Taiwan's industrial and environmental development. EPA Administrator Edgar Lin listed resolution of the industrial waste problem as a priority for his administration. For this reason, the EPA recently invited various sectors to discuss the future of industrial waste management policy. At the meeting, Administrator Lin stressed his commitment to providing adequate incentives for investment in industrial waste treatment facilities. Concrete measures will be forthcoming in the next month and a half.

Over 18 million tons of industrial waste are generated in Taiwan each year. Faced with a lack of dedicated disposal sites, around 5 million tons are simply dumped in local municipal landfills. Of the current 316 municipal landfills, close to 62% will soon reach capacity, and at present only a few large industrial organizations (such as China Petroleum Corp. or Formosa Plastics) have been able to setup their own final disposal sites. Six privately operated facilities offer only 1.08 million tons of additional capacity. In short, Taiwan faces a severe shortage of industrial final disposal sites.


The lack of treatment and disposal options has prompted EPA Administrator Edgar Lin to list resolution of the industrial waste problem as a priority for his administration. On June 16 the EPA called the "Industrial Waste Management and Assistance Seminar," attended by the Industrial Development Bureau, manufacturing and waste disposal associations, and a number of state owned and large private enterprises. In total, 60 different organizations attended to present their suggestions for resolving the issue.

At the meeting, Administrator Lin noted that after formation of the new government the entire nation has high expectations for improving environmental qual-

ity. Thus, he pointed, the government must resolve to come to terms with the industrial waste problem. The EPA will actively support industrial organizations and private waste contractors, and act as a communications bridge to create a win-win situation between public-industry-government. During the meeting, a spirited exchange took place on a number of subjects, such as assistance from manufacturing associations to help members setup joint treatment systems, raising the self-clearance and treatment abilities of state owned enterprises and industrial parks, and waste contractors role in handling environmental problems.

To encourage Taiwan's industrial sectors to shoulder greater responsibility, Lin stated that the EPA's door is always open to hear the opinions of industry members. After considering the viewpoints expressed during the seminar, within the next month and a half the EPA will propose concrete industrial waste treatment policies to be implemented.

Since amendments were passed to the *Waste Disposal Act* in July 1999, industrial enterprises are required to properly treat all wastes generated. Failure to meet this obligation can result in factory closure, fines and prison sentences.

To comply with these requirements as laid down in the amendments, the EPA and the Ministry of Economic Affairs Industrial Development Bureau recently proposed an Industrial Waste Disposal Promotion Plan to the Executive Yuan. The plan provides assistance and guarantees for enterprises that invest in industrial waste treatment and disposal facilities. It also offers tax benefits, low interest loans, lease or sales of land from state owned enterprises, and other incentives to encourage private investment in waste treatment facilities. 

News Briefs

Administrator Lin Attends First EIA Review Committee Meeting: Tainan Golf Course Plan Rejected

On June 3 EPA Administrator Edgar Lin chaired his first full review meeting of the EPA's Environmental Impact Assessment Review Committee. At the meeting EIAs were passed for United Microelectronics Fab 8E and three other wafer foundries. In addition, a golf course development plant in Tainan was rejected due to lack of sufficient precautionary measures and concrete plans. The case will be further reviewed by an experts committee.

EPA Promotes Compensated Removal of Hog Farms to Restore Water Source Regions

After repeated consultation with agricultural agencies, the EPA announced that it will soon begin compensated removal of hog farms near water source regions around the Kao-Ping, Tamshui, Touchien,

Tachia, and Tsengwen rivers. Work should begin this year and finish after three years. Applications must be submitted within a specified time limit. Those that remove operations within six months of notification are eligible to apply for a self-removal reward.

Remote Sensing Technology for Marine Oil Pollution Developed

On June 18 the EPA announced the results of an R&D project to develop remote sensing technology for use on marine oil pollution incidents. The technology uses image processing methods to bound oil pollution captured on satellite imagery. This process allows early discovery and collection of evidence about marine pollution near Taiwan. The EPA noted that oil pollution near Taiwan is relatively serious. Completion of this satellite observation system will allow Taiwan greater effectiveness in monitoring and prevention of marine oil pollution incidents.

EPA Plans to Accelerate Phase-out of Older Vehicles

With 15 million cars and motorcycles on the road, Taiwan has the highest vehicle density in the world. Even though emissions standards are increasingly tightened, vehicle emissions remain a problem of considerable magnitude. To improve this situation, the EPA is currently drafting control measures and incentives that will accelerate the phase out of older vehicles.

Taiwan has 5.5 million cars and more than 10 million motorcycles and scooters. Combined with Taiwan's limited land area, these figures show that Taiwan has the dubious honor of having the world's highest vehicle density. This situation clearly takes a heavy toll on the island's environment. Taiwan currently has regulations encouraging the upgrading of older motorcycles, but the government has not set limits on the number of vehicles that can be sold on the island. EPA Administrator Edgar Lin recently indicated that the EPA is looking into further emissions reduction measures. He has requested the EPA's Bureau of Air Quality Protection and Noise Control to put forth within the next six weeks several policy options for discussion.


The Bureau of Air Quality Protection and Noise Control, stated that controls on the total number of vehicles can proceed in two directions. Maximum vehicle number limits can be set according to total emission levels from cars and motorcycles. Under this approach, government issued vehicle registrations would be approved only if sufficient capacity existed. The other method for controlling

the growth in the number of vehicles would be to increase the burden and difficulty of purchasing a vehicle. At the same time, promotion of clean vehicles – such as electric motorcycles and compressed natural gas busses – would also occur.

The Bureau emphasized that the EPA does not intend to encroach upon the basic mobility rights of Taiwan's citizens. In today's mature environment, mass transit is becoming more and more convenient, while problems such as parking space shortages and traffic jams are creating headaches for those who choose to drive their cars.

The key to controlling the number of in-use vehicles will be accelerating the exchange of old vehicles for new ones. Measures as they are currently being considered would require the upgrading of vehicles older than 10 years. Government subsidies would be offered to help the public in upgrading.

In Taiwan, vehicle emissions make up very significant portions of total annual emissions. For example, vehicles emit 80% of the island's total CO emissions, 31% of the HC emissions, and 47% of the NO_x emissions.

In response to concerns over controls on the total number of cars, EPA Administrator Lin pointed out that the EPA is currently only researching such controls and acceleration of the older car upgrading measures. He stated that if the general public has trouble accepting quantity controls, the policy will not be implemented. 

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Dr. Edgar Lin, Administrator,
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Editor-in-Chief

Dr. Chea-Yuan Young, Director General,
Office of Science and Technology Advisors
Environmental Protection Administration

Editors

Dr. Y.F. Liang, Dr. Shawn Chang,
Lee-Kuo Hsiao, Bruce Berkman

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Office of Science and Technology Advisors

41, Sec. 1, Chung-Hwa Rd.

Taipei, Taiwan, R.O.C.

tel: 886-2-2311-7722, ext. 2203

fax: 886-2-2311-5486

e-mail: umail@sun.epa.gov.tw

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