Environmental Policy Monthly

Taiwan R.O.C.

Volume III, Issue 7 January 2000

In this issue . . .

Soil and Groundwater Pollution Remediation Act Passes

On the evening of January 13th, a full meeting of the Legislative Yuan completed the second and third reading of the *Soil and Groundwater Pollution Remediation Act*, officially bringing the new Act into law. The Legislature confirmed that the new Act will fully address groundwater pollution remediation, and established a system where soil and groundwater pollution sites will be divided into two categories. When levels of soil or groundwater pollution exceed set control standards, the site will be listed as a "control site", and the competent authority will be charged with taking steps to prevent further spread of pollution. Control sites assessed to be high risk will then be listed as "remedial sites", and the polluter or person involved with the land must remediate the site in accordance with regulations. Sale of the polluter or involved persons' land will also be prohibited.

To prevent the worsening of Taiwan's soil pollution problems, the Legislative Yuan (LY) began immediate review of the draft *Soil Pollution Remediation Act* proposed in June by the Executive Yuan (EY). During the initial review, the EPA took active steps to consolidate and negotiate on the different versions proposed by respective legislators, and finally came up with a consensus. On December 15, the draft easily passed the first reading by the Health, Environment and Public Welfare Committee, and on the evening of January 13 the second and third reading of the Act were passed, officially bringing it into law.

The original EY version was focused heavily on the remediation of soil pollution, however most of the legislators involved favored broadening the scope of the Act to equally include groundwater remediation. After an assessment, the EPA agreed to accept the LY suggestion and incorporate groundwater remediation together in the Act.

After determining that groundwater would be included, the original two level monitoring and remediation system was changed to a three level monitoring, control and remediation system. According to the new Act, if soil or groundwater pollution has a clear source and concentrations exceed control standards, the competent authority must declare the site as a "control site". The competent authority must then take necessary measures and can request the polluter to provide pollution control plans (not remediation), to be implemented after approval by the competent authority.

When control sites, after going through set assessment procedures, are suspected of posing a threat to public health and the environment, the competent authority will declare it to be a "remedial site". At such time, the polluter will be required to provide a remediation plan. In principle, the remediation standards to be used should be below control standard values and will be reviewed on a case-by-case basis after their proposal by the polluter in the remediation plans. If, for reasons of geographic nature, unique character of the pollutant, or the limitation of remedial technologies, there is no way to treat a site to below control standards, the results of a health risk assessment may be used to set flexible remediation standards.

In addition, if the source of groundwater contamination is unclear, but pollutant concentrations exceed control or remediation standards, the implementation of control or remedial procedures will be the same as at sites where the pollutant source is clear, but action will be undertaken by the proper government authority.

To avoid difficulties that would arise from the transfer of ownership of polluted lands, the EY draft recommended that a prohibition for the sale of land within a control site should be submitted to land registration authorities. However, because the scope of groundwater pollution is frequently greater than that of soil pollution, the new Act prohibits the polluter or interested parties from selling the entire property containing the remedial site.

The establishment of a remediation fund will continue to be structured around the collection of fees from designated chemicals. However, the new Act will increase sources for the fund by diverting money from other related environmental protection funds and environmental fines.

Operation and management of the fund is provided for by the establishment of a Fund Committee. The committee will be able to form necessary assessment and technical working groups. Committee members will be made up of at least 2/3 experts and academics, and members and their relatives must conform with articles designated to prevent a conflict of interest.

The new Act also stipulates that the law will go into effect one year after it's announcement, and maintains the EY draft stipulation that existing pollution sites will be affected by the law ex post facto.

Interim Effluent Standards Expire

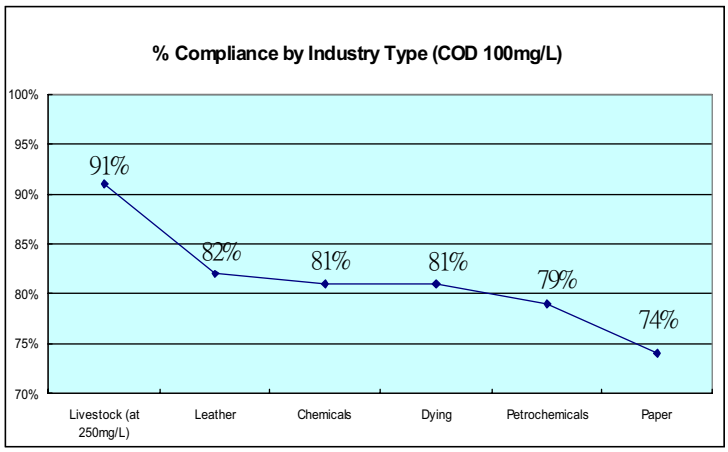
After the 1998 interim effluent standards expire, industries using the interim standards will need to prepare for a slightly modified draft of the 1998 Effluent Standards to take effect. In the draft proposed by the EPA, to encourage recycling in the paper industry, different COD limits will be set according to wastepaper recycling rates. Also, due to the use of different testing methods the standard for true-color value will be adjusted to 550. After completing a public hearing, the EPA presented the draft standards to the Executive Yuan for approval.

The reasonability of effluent standards has once again become a topic of contention. Effluent standards were first set in 1991 in Taiwan, and tightened

successively in 1993 and 1998. However, before implementation of the 1998 standards, the EPA received a constant stream of industry feedback, asking it to loosen pollutant limits set in standards they claimed were too tough.

In the face of scientific evidence and documentation presented for the industry case, on December 24, 1997 the EPA made a well intentioned gesture by creating interim standards for seven large industries; chemicals, paper, pulp, petrochemicals, livestock, leather, and printing and dyeing. Industries were required to come up with improvement plans, and after submitting the plans would be subject to the interim standards for two years.

However, after two years, as the interim standards were set to expire, the reasonability of the 1998 effluent standards has once again been brought to the table. The seven large industries have one-by-one presented studies showing that the 1998 standards are too tough, and asking that the interim standards be maintained as the new 2000 standards.



Because COD (chemical oxygen demand) and SS (suspended solids) are the main items toughened in the 1998 standards, most industry suggestions were directed at maintaining the interim restrictions for these two standards. Industry representatives noted low sewerage hookup rates in Taiwan make it impossible to jointly treat industrial and residential wastewater. In this situation, there is no way to adjust the mixture of COD and BOD levels to optimum proportions, lowering the effectiveness of organic wastewater treatment.

In addition, industry representatives also pointed out that traditional secondary bio-treatment methods are insufficient to further lower COD discharges, so chemical treatment methods must be used. After the use of large quantities of chemical additives, operating costs and quantities of waste sludge will both increase, as well as the bio-toxicity of wastewater discharges.

To come up with a set of reasonable, workable effluent standards, the EPA called numerous meeting between experts and academics; industrial groups; the Industrial Development Bureau (IDB) and the Council of Agriculture, to discuss the standards in light of the current status of industry improvements, technological feasibility and environmental impact. A total of nine different meetings resulted in changes to the draft standards that ensure effluent management will be more reasonable and practicable. Changes include:

1. Due to a change in the testing method for true-color value, the control standard for true-color value should be 550. Thus, the control standard for all target industries was changed to 550 and the proscribed testing method will remain the current method in practice.

2. Due to a major switch to wastepaper as a raw material by the paper industry in order to comply with recycling policies, the current shape of the paper industry and the character of it's effluent stream have changed completely. For this reason, paper companies where wastepaper makes up over 60% of raw materials used are allowed a COD limit of 180mg/L. For companies where wastepaper consists of below 60% of raw materials, the COD limit will be 160mg/L, and companies that do not use wastepaper will have to comply with the COD 100mg/L standard.

The EPA emphasized that in 1988 and 1987, 2,000 companies made use of the interim standards and signed pledges to continue improvements to pollution prevention. In total pig raising was decreased by almost 280,000 head and around 2.2 billion NTD were invested in order to meet the 1998 effluent standards. Moreover, statistics compiled from onsite audits by local EPBs revealed that compliance with COD standards averages around 81% among industry groups (see chart), with the additional 19% able to meet interim standards. To totally readjust effluent standard values only for the sake of this 19% of problem industries would be a step in the wrong direction and be a violation of the EPA's mandate to protect water quality. Accordingly, the effluent standard values will not be changed again during the current phase.

Over the next half year, the EPA will check to see if industries have made any of the pollution prevention improvements suggested over the course of their meetings. Some methods suggested include the separation of solid and liquid wastes from pig-rearing, removal of high salt and chlorine liquid wastes in the dying materials and leather industry, or the removal of dying materials and treatment additives from wastewater in the dying industry. If these changes are reflected by the solid waste online reporting system or by audit numbers, or it can be shown that companies are properly using wastewater treatment facilities but are still stuck at the edge of compliance due to technology bottlenecks, the EPA will deal with new them on a case-by-case basis. After onsite verification by special personnel, the possibility of opening a subcategory standard can be assessed and discussed.

Organic Tin, MTBE and Others to be Listed as Toxic Chemicals

The EPA is accelerating the listing of toxic chemical substances. The first two rounds of listing were announced in quick succession, while third is awaiting announcement and the fourth round was just recently put forth. This round included listings of chemical substances such as organic forms of tin and MTBE. Once this round has been formally announced, the total number of substances listed as toxic will surpass 250.

To accelerate the pace of listing toxic chemical substances, on December 24 1999, the EPA announced two rounds of toxics, totaling 64 different kinds of toxic chemical substances. A third round is going through announcement procedures, and the EPA further proposed a fourth new round at the end of the December. The fourth round includes 20 categories and more than 75 different kinds of chemical substances, such as organic forms of tin and MTBE (see accompanying table).

Fourth Round Listing of Toxic Chemical Substances (Draft)

Chemical Name	CAS. No.	Toxicity Classification
4,4'-Bisphenol A	80-05-7	I
1,2-Dichloropropane	78-87-5	I
Hexachloroethane	67-72-1	I
Hexachloro-1,3-butadiene	87-68-3	I
Beryllium	7440-41-7	II
p-Chloro-o-toluidine	95-69-2	II
Dimethylcarbamyl chloride	79-44-7	II
Styrene oxide	96-09-3	II
1,2,3-Trichloro-propane	96-18-4	II
Fluorine	7782-41-4	III
Phosphine	7803-51-2	III
Phosphorous trichloride	7719-12-2	III
Thiosemicarbazide	79-19-6	III
1,1-Dichloroethylene	75-35-4	IV
2,4-Dichlorophenol	120-83-2	IV
Dichlorobromo methane	75-27-4	IV
Dicyclo-pentadiene	77-73-6	IV
Hydrazine	302-01-2	IV
Methyl tert-butyl ether	1634-04-4	IV
Organic Forms of Tin (specific chemicals currently being identified)		I

Officials in the EPA's Bureau of Environmental Sanitation and Toxic Chemicals Control have indicated that of these substances, MTBE (Methyl tert-butyl ether), most commonly used as a gasoline additive, is a suspected carcinogen, and several countries are currently looking into finding substitutes. On April first of 1999, the governor of the U.S. state of California, for example, has ordered that it be phased out by December 31, 2002. To this effect, California has initiated a large scale campaign that would completely remove MTBE from gasoline sold in that state.

Because MTBE has not yet been proven to be a carcinogen, however, the EPA has only classified it as a Class IV chemical substance, but has not placed any controls on its usage. Officials have stated that if the toxicity of MTBE is confirmed, the EPA will then consider reclassifying it as a Class II chemical substance.

Other notable chemical substances to be listed in this round are organic forms of tin. Research coming out of Germany and other countries suggests that not only are organic forms of tin endocrine disrupters in the human body, they also have serious adverse impacts on marine ecosystems. As a result, in November of 1999 the International Marine Organization (IMO) announced that beginning in 2003, organic forms of tin will be prohibited from use as additives in ship hull paint. Moreover, by 2008 ships will be required to remove all paint containing organic forms of tin.

In response to these international moves, the EPA has decided to list organic forms of tin as toxic chemical substances. Because these substances accumulate in biological organisms, they have been listed as Class I chemical substances. Although organic tin is the blanket term commonly used, initial estimates indicate that there are more than 55 different kinds of organic tin.

Other chemicals targeted in this round include hydrazine, a suspected toxic used in the dyestuffs industry, and fluorine, commonly used as a tooth decay preventative. The former substance will given a Class IV status, and the latter will be listed as Class III due to its acute toxicity.

After initial selection of the substances for listing, the EPA convened a public hearing on January 4. In the past, the EPA has listed toxic chemicals using their scientific names but has had difficulty identifying the commonly used names of many chemicals. To enhance the clarity of listings, the EPA hopes that during the public hearing, firms that use listed chemicals can provide the common Chinese names of such chemicals. These will then be used as the basis for their listing.

Toxics Bureau officials have further noted that once the fourth round of listings has been announced, the total number of control substances in Taiwan will exceed 250. At this speed of listing, the EPA has already fulfilled the commitment it made to the Legislative Yuan to accelerate the rate at which toxic chemicals are brought under control. The next phase of EPA plans will be to step-up enforcement of regulations for listed toxic chemicals, so it is unlikely that there will be another large scale listing of new chemicals in the near future.

Toxic Chemical Labeling Requirements to be Amended

The EPA is planning to modify regulations concerning toxic chemical labeling. In the future, all toxic chemicals must be labeled according to respective classifications as dangerous substances. However, those chemicals that cannot be classified will no longer be required to bear warning symbols. In addition, it is clearly stated that manufacturers and importers of toxic substances will be responsible for making related labels and material safety data sheets. They will also be required to provide 24-hour accident response hotlines. Finally, labeling requirements that impact users of small amounts of toxic chemicals will be relaxed.

In support of the Council of Labor Affairs' (CLA) recent amendments to the *Regulations Concerning Awareness of Dangerous and Hazardous Substances*, the EPA plans to significantly upgrade guidelines for toxic chemical labeling and material safety data sheet (MSDS) management. To hear opinions from concerned sectors, the EPA convened a discussion meeting on November 16, 1999.

According to the above mentioned CLA regulations, dangerous substance labels can be classified into nine types. Class 1, 2, and 3 toxic chemicals must bear different labels (see accompanying table). Because the characteristics of different substances vary widely, however, it may be impossible to provide accurately warning symbols for some toxic substances. In this case, the EPA has decided that toxic chemical warning symbol categories will not be regulated separately. Classification requirements will follow those of the CLA's regulations, and toxic chemicals which cannot be classified will be exempt from warning symbol requirements.

As for toxic chemical labeling responsibilities, the EPA's draft amendment requires toxic chemical manufacturers and importers to label all containers and packaging. Purchasers and users of toxic chemicals must, in turn, maintain the readability and completeness of the labels.

In a further definition of labeling responsibility, MSDS-related draft regulations require manufacturers and importers to produce the MSDS, and vendors of toxic chemicals must provide copies of MSDS to purchasers. It is also important to note that the draft amendment further requires manufacturers and importers to publish telephone hotline numbers in the MSDS. These hotlines are to provide emergency response advice in the event of an incident.

As for pipelines and other toxic chemical distribution networks, the draft amendment requires that the name of the chemical be displayed such that it can be easily seen from any angle. When necessary, a sign to this effect may be hung, in place of the above mentioned labeling requirement.

The amendment also relaxes labeling requirements for organizations that use small amounts of toxic chemicals. Containers and packages with volumes smaller than 100 milliliters are only required to bear substance name and the appropriate warning symbol. If amounts below the specified control quantities are used, and the organization specifically provides is a laboratory, research or educational services, then the site using the substances is only required to display a sign reading "Toxic Chemicals Used On Site" at relevant entrance points. This requirement is in lieu of other more complex labeling requirements.

The draft amendment also takes a flexible approach to regulating the labeling of chemicals that are solely produced for export. Producers may label such chemicals in accordance with international norms or the regulations of the recipient country.

Because consensus on the draft amendment has already been reached among relevant agencies, the EPA expects to formally amend and announce the regulations by the end of January. According to the current draft, concerned parties will then have to comply with the new labeling requirements by January 1, 2001.

Comparison of Current Toxic Chemical Labeling Categories

Toxic Chemical Classification	Type of Dangerous Substance	Category
Class 3	1 Explosive Materials	
	2 Gaseous Substances	2.1 Flammable gasses
		2.2 Non-flammable, non-toxic gasses
		2.3 Toxic gasses
	3 Flammable liquids	
	4 Flammable solids	
	5 Oxygenated substances	
Class 3	6 Toxic substances	6.1 Toxic substances
	7 Radioactive substances	
	8 Corrosive substances	
Class 2 and Class 3	9 Other dangerous substances	

Feature Article

EPA Formulates Program to Promote Green Procurement by Government Agencies

The EPA is working on a plan to promote the green procurement clause in the *Government Procurement Act*. The EPA hopes that each year, over half of the procurement budget for office supplies and equipment by government agencies will go to green products. In order to realize this goal, the EPA will provide training and materials; form assessment working groups from various circles; and provide rewards for good performance. The program was presented to the Executive Yuan at the end of December.

Over the past years, green consumerism has become a vital international trend. In response, a number of countries have instituted green purchasing systems to rally public power in support of this movement. Among the many examples available, in the U.S. in 1991 the President issued an order requiring government agencies to priority purchase green products, which was followed this year by the USEPA's *Final Guidance for Environmentally Preferable Purchasing*. In Canada, a bill on environmentally responsible procurement was introduced which requires the government to use products bearing eco-labels, and in Denmark, the *Strategy for the Promotion of Sustainable Procurement Policy* stipulates that the government must give priority to using green products.

To promote this system in Taiwan, in May of 1998 when the *Government Procurement Act* was set, the Legislative Yuan included a clause for green procurement. The clause stipulates that during government procurement bids, products bearing the Green Mark (Taiwan's eco-label) or with comparable characteristics, should be given priority in the bid and enjoy a price advantage of within 10%. In accordance with this regulation, the EPA and the Public Construction Commission drew-up the *Regulations for the Priority Procurement of Eco-Products by Government Organizations* and more recently the *Guidelines for the Review of Tier 2 Eco-Products*, completing the regulatory framework for green procurement.

However, because the green procurement clause in the *Government Procurement Act* is not compulsory, even with complementary laws and a legal basis in place, most government agencies continue to operate under the traditional procurement model to avoid additional hassles or disputes. In light of this situation, the EPA formulated a draft *Program to Promote Green Procurement in Government Agencies*, and reviewed it with relevant departments on November 30 and December 21.

According to the framework proposed by the EPA, the initial goals of the program will be tailored to fit with the current trend of applications for Green Mark use. Thus, the products prescribed for procurement will initially be fixed on office supplies and equipment. The EPA hopes that all government departments will set aside over 30% of their annual budget for the purchase of items in this category to eco-products in the year 2000, and 50% in the year 2001. Subsequent green procurement targets will be decided in departmental discussions and based on actual performance results from the previous year.

To reach these goals, the EPA will arrange green purchasing training courses for procurement staff working in government agencies. The courses will be designed to raise recognition of eco-products and familiarize participants with the procedures for green procurement. Additionally, the EPA will regularly provide a procurement guide publication for relevant personnel and make use of a hotline, an up-to-date webpage, and other methods as useful references for carrying out affairs related to green procurement.

In order to better understand the achievements of different agencies in implementing green procurement, the EPA has asked all departments to compile statistics biannually on the results of their green procurement efforts. The EPA will then do further compilation and analysis. The EPA also plans to form a working group to assess achievements for green procurement, drawn from executive agencies, academics and experts, and citizens groups to perform a review at the end of every fiscal year. Agencies with good performance will be specially reported to the Executive Yuan and receive public commendation.

In response to the proposed program, most representatives attending the discussions felt the need for a sufficient guidance and adjustment period to facilitate progressive implementation and enlargement of the program. Furthermore, they expressed hope that the EPA would adjust the initial targets and scope of the program. After further discussion, the EPA expressed that because communications with local governments on the program are not yet sufficient, the first wave of the program would target central government agencies. After conclusion of these meetings, the program was presented to the Executive Yuan for approval at the end of December.

Over 89 Billion NTD Budgeted for the Environment in FY 2000

Environmental agencies throughout Taiwan have set budgets totaling 89.2 billion NTD for the 18-month fiscal year 2000. This is an increase of 29.3 billion NTD over the FY 1999 budget. However, when the longer fiscal year cycle is taken into account, this is the first fiscal year out of the last five that the island-wide environmental protection budget has witnessed negative growth. The EPA considers the budgetary contraction to be mostly due to significant decreases in allocations for building construction equipment, environmental sanitation, toxic substance management, environmental monitoring, and data management.

The EPA recently finished compiling statistics to shed light on how island-wide environmental agencies are allocating Fiscal Year 2000 environmental protection budgets. (FY 2000 is an 18-month fiscal year that includes the latter half of the 1999 calendar year and all of 2000). The survey revealed that the aggregated environmental budget for FY 2000 has actually been somewhat scaled back. This is the first time in five years that the budget has undergone negative growth.

The EPA's Office of Statistics indicated that the total environmental budget for FY 2000 equaled 89.28 billion NTD. At face value, this figure represents a 29.33 billion NTD increase over FY 1999. When the total budget is calculated on a 12-month basis, however, it shows a decrease of 0.72%, or 430 million NTD, from FY 1999 (see accompanying table).

Island-Wide Total Environmental Protection Budgets in Recent Years

	Total Budget		Per-capita Budget	
Fiscal Year	Amount (billions of NTD)	Growth Rate (%)	Amount (NTD)	Growth Rate (%)
1989	15.18		763	
1990	16.06	5.82	799	4.75
1991	16.61	3.44	817	2.19
1992	26.92	62.00	1310	60.39
1993	31.63	17.50	1524	16.4
1994	34.49	9.03	1647	8.04
1995	29.53	-14.38	1398	-15.12
1996	35.11	18.92	1648	17.93
1997	39.31	11.96	1831	11.09
1998	44.03	11.99	2031	10.89
1999	59.95	36.16	2741	34.99
2000*	59.52	-0.72	2712	-1.07

*FY 2000 budget calculated as 12-month fiscal year cycle.

According to reports, Taiwan's total environmental protection budget grew from 15.1 billion 840 thousand NTD in 1987, when the EPA was established, to 34.4 billion 940 thousand NTD in 1994. In 1995, the budget decreased for the first time as the EPA required less money for environmental protection-related construction. In subsequent years, the budget returned to positive growth due to increased expenses for such activities as collection of air pollution fees for stationary and mobile sources; collection of air pollution fees for construction activities; incinerator construction; and the encouragement of incinerator privatization. By 1999, the total budget had hit its historic high of 59.9 billion NTD.

On a per-capita basis, the budget for FY 2000 is at a level of 2,712 NTD, which is 29 NTD lower than in FY 1999. Much like the overall budget, the per-capita budget has generally undergone steady growth since 1987.

In terms of budget allocation, the largest budget item remains solid waste management. 62.9 billion NTD, or 70.48% of the total budget, has been allocated for this purpose. The second largest budget item for FY 2000 is the air pollution control fund. It will receive 8.7 billion NTD, 9.84% of the total budget.

From the standpoint of environmental agencies, the EPA controls the highest percentage of the island-wide environmental budget – 38.21%, or 34.1 billion NTD. The next highest percentages of environmental budget are controlled by Taipei City (11.3 billion NTD) and Taipei County (9.1 billion NTD). On the other side of the spectrum, Peng-Hu County has the smallest share of the environmental budget, with only 230 million NTD.

The EPA's Office of Statistics also indicated that budget items which have undergone the largest contractions include "general facility construction and equipment", "environmental sanitation and toxic substance management", and "environmental monitoring and data management." These items have seen reductions of 37.7%, 27.36%, and 24.83%, respectively.

Dioxin Standards for Small Incinerators On the Way

The Environmental Quality Protection Foundation (EQPF) has brought allegations of high risk from dioxins produced by domestic waste incineration. These allegation have generated a strong public backlash. In response the Legislative Yuan would like to establish a National Dioxin Countermeasures Working Group, which would pool resources from various agencies to forward protective measures against dioxin. On the other hand, the EPA pointed out that 95% of the data on which the EQPF's risk assessment is based was suppositional, and difficult to verify. The EPA, however, has already begun plans for actual health studies of residents near incinerators and will set dioxin standards for small-scale incinerators by the end of the year 2000. Additionally, the EPA has changed EIA regulations to incorporate health risk assessments.

The Environmental Quality Protection Foundation (EQPF) recently unveiled shocking information on dioxin risks in Taiwan. The EQPF commissioned a study on dioxin emissions from Taiwan's five large municipal incinerators by the Chungting Co. and Chianan Technical College, of which the results were analyzed by the Director of the National Taiwan University Graduate College of Medicine. According to results from the study, dioxin risks in Taiwan exceed that of the U.S. by a significant factor. The EQPF pointed out that extrapolations based on the study model show that dioxin risks from emissions of Taiwan's five large municipal incinerators are above average.

In looking at the results of the EQPF study, the EPA pointed out that the data and model used in the study were directly borrowed from abroad and that the study lacked sufficient domestic data. Viewed in this light, there are still open questions about the study's accuracy. Furthermore, the EPA noted that dioxin emission standards were just recently tightened and are now equivalent to those in advanced countries. Finally, improvements being made to existing incinerators by local governments should be completed by the end of this year.

To allay public fears about dioxin emissions, in November of 1999 the EPA began work on a study of environmental dioxin concentrations in areas located near incinerator plants. Study locations were selected with priority for plants currently in operation with large local populations, or areas designated for construction of large scale incinerators. The study items include air, soil, vegetation, and blood samples from local residents. The first year of the study will take place at the incinerators in Mucha, Hsindian, and Taoyuan's South District. Study of the first two locations will assess post-operation impacts, and the last will gather pre-construction baseline data to be used as a reference after operation begins.

Due to the tremendous public concern on this issue, the EPA expressed that it will speed up formulation of dioxin emissions standards for small and medium incinerators, and finish them before end of this year.

The EPA has modified regulations in the *Environmental Impact Assessment Codes of Practice for Development Activities*, to list human health risk analysis as one of the methods to be used during a risk analysis for toxic chemical substances. To develop a local, standardized assessment model, the EPA has invited experts and academics as well as environmental technology consulting agencies to jointly determine technical standards for risk assessment of toxic substances. After technical standards are set, developers can use them as a basis for performing EIAs.

Measures to Reduce Plastic Bag Use Underway

To alleviate the problems of excessive plastic bag usage, the EPA has promoted R&D on bag material substitutes, sought modification of consumer behavior, and strengthened regulatory controls. In addition to working with large retail outlets to develop express lines for shoppers using their own bags, the EPA has also contracted consulting firms to draft effective control measures, which should be completed by the end of this year.

The rapid development of Taiwan's petrochemical industry and the public's emphasis on convenience have led to large quantities of plastic bags being consumed on a daily basis. Statistics indicate that in 1997, 227,000 tons of plastic bags were produced and, roughly speaking, nearly 3 billion plastic bags were used. These numbers suggest that plastic bag usage has created a very large environmental burden.

The EPA stated that because plastic materials do not easily degrade they are harmful to the environment and greatly complicate waste management efforts. To encourage the general public to reduce plastic bag usage rates, the EPA's Bureau of Solid Waste Management has announced plans to promote R&D of replacement materials, modify consumer behavior, and strengthen regulatory controls.

In the area of material substitution, many people have over recent years indicated a strong interest in developing biodegradable plastics. The EPA hopes that these more environmentally friendly materials will come to replace the plastics that are currently use to make bags. This switch should reduce the total amount of plastic consumed and lighten the environmental impact of disposed plastic bags. These new plastics can be divided into partially degradable and completely biodegradable plastics. The former type of plastic cannot be considered fully degradable because portions of the bag never break down. Fully biodegradable plastic, on the other hand, is composed of polymers secreted by microorganisms and can be broken down from macromolecules into smaller

units which are then decomposed by microorganisms. The resulting by-products are only CO_2 and water.

Solid Waste Bureau officials have indicated that even though technical breakthroughs have yet to be made in the production of fully biodegradable plastics, their ability to decompose quickly in the environment merits their widespread use, especially in the agricultural sector. Prior to the technology becoming mature, the EPA will encourage, rather than mandate, the use of fully biodegradable plastics. One promotion method will be to open an eco-label category for products that use such plastics.

As for encouraging consumers to use fewer plastic bags, the EPA has been cooperating with the Environmental Quality Protection Foundation and the Conservation Mothers Foundation to develop "bring your own bag" activities in supermarkets and hyper-marts. Discussions with these firms have focused on providing express checkout service and price discounts for consumers that use their own bags for shopping. The EPA hopes that this type of voluntary program will strengthen promotional efforts and encourage consumers to use fewer plastic bags.

Another approach will be to take regulatory action. The EPA has indicated that should future studies reveal the environmental impact of disposed plastic bags too great, it has the authority under the *Waste Disposal Act* to enact regulatory controls. Section 7 of Article 10.1 of the *Act* states that "if products or their packaging or containers are suspected to result in serious environmental impacts, the Central Competent Authority [EPA] may announce prohibitions or restrictions on the manufacture, import, or sale of such items." The EPA will also be looking into prohibiting retailers over a certain scale from offering plastic bags free of charge to consumers. In this case, consumers desiring to use a plastic bag would have to separately purchase the bag. This approach would be in line with the "polluter pays principle" and should reduce plastic bag usage rates. Because the legal basis for this regulatory requirement is disputable, however, its implementation will likely be dependent on establishment of the planned *Resource Recycling and Reuse Act.*

To draft a regulatory control strategy and, in the meantime, to understand international controls on plastic bag use, the EPA has contracted the Plastics Industry Technology Development Center to research a "Plastic Bag Management and Control Plan." The plan is to include collection and analysis of basic data on plastic bags, an in depth study of the most suitable means for clearing and disposing of plastic bags, and forecasts of plastic bag production rates. The plan will further include feasibility studies of recycling and disposal measures and cost-benefit analyses of disposal and recycling measures. Relevant data from industrialized nations will also be collected, with attention given to the circumstances of plastic bag usage, related regulations, recycling and disposal implementation methods, and the status of plastic bag substitutes.

Solid Waste Bureau officials have indicated that an initial draft of the aforementioned plan should be completed by September of this year. It is likely that possible control measures will be discussed with concerned parties prior to the end of the year.

News Briefs

Public Dispute Settlement Changed to a Two-tiered System in Conjunction With Provincial Downsizing

On December 6 the Legislative Yuan's Health, Environment and Public Welfare Committee reviewed the Executive Yuan's proposed revisions to the *Public Dispute Settlement Act*. The proposed revisions are mainly in conjunction with government restructuring, doing away with the re-mediation mechanism of the former Taiwan Provincial Government (PG), and changing the previous three-level public dispute re-mediation system to a two-level system. In addition, the former PG's mediation committee and emergency dispute settlement working group will also be done away with.

Revisions to Waste Disposal Act Pass First Reading

The Legislative Yuan's Health, Environment and Public Welfare Committee passed draft revisions to the Waste Disposal Act on December 6. In addition to supporting the downsizing of the Provincial Government, future implementation rules for the *Waste Disposal Act* will be set by the EPA.

EIA for the Binnan Industrial Park Conditionally Passed

Due to a fast approaching deadline, the EPA opted to speed up EIA review for the proposed Binnan Industrial Park. On December 17, the EIA Review Committee was convened, and after in-depth discussions the Committee passed the EIA report for the Binnan Industrial Park, however with some stipulations. The Review Committee ruled that for harbor construction during the initial project phase, lagoon use must be limited to under 5%, with use of any additional areas temporarily off limits. Also, total water supply during the initial phase will be limited to 80,000 tons per day.

Post-Disaster Emergency Construction Projects Exempted from Air Pollution Fee

On December 15, the EPA modified the *Regulations Governing the Collection of Air Pollution Control Fees*. The modifications exempt post-disaster emergency construction projects from turning in the air pollution fee, after receiving county government approval. The changes also remove the air pollution charge for removal of illegal building constructs.

Standards for Automotive Diesel Fuel Constituents and Properties Announced

To respond to the liberalization of the Taiwan petroleum market, on December 15 the EPA officially announced the *Standards and Specifications for Automotive Fuel Constituents and Properties*. A three-level system will be introduced for gasolines, and sulfur content will be limited for diesel fuels.

Public Hearing on Stage-Three Standards for Light Diesel Vehicles to be Held

As part of its bid to enter the World Trade Organization, Taiwan has pledged to allow imports of diesel-powered automobiles and small trucks. In anticipation of this move, the EPA has begun drafting revisions to the island's diesel vehicle emissions standards. According to the draft put forth by the EPA, if Taiwan's entry into WTO goes smoothly, then the existing three-phase emissions standards for gasoline-powered vehicles will be used as the basis for revising the diesel emissions standards. If WTO entry is delayed, however, the EPA will directly implement standards that parallel US federal emissions standards.

In order to prevent air pollution generated by diesel oil emissions, Taiwan had previously banned the import of diesel-powered light vehicles. In discussions with the European Union regarding the island's WTO entry, however, the EU – where diesel vehicles are used most extensively – insisted that Taiwan open its markets to diesel-powered light vehicles. Because WTO entry is of primary importance, the Ministry of Transportation and Communications in conjunction with the EPA have promised that within two years following WTO entry imports of diesel vehicles will be allowed.

As Taiwan moves closer to joining the world trade body, the EPA has begun taking measures to bring light vehicle diesel emissions under regulatory control. It recently contracted the Vehicle Research and Testing Center (VRTC) to draft Stage-Three emissions standards for diesel emissions from light vehicles. To discuss these developments with concerned parties, the EPA met with vehicle industry representatives on November 30 of last year.

At this meeting, VRTC personnel stated that in the US light vehicle and commercial vehicle emissions standards are divided into Tier 1 and Tier 2 stages. The former standards were implemented in stages between 1994 and 1997, while the latter will come into effect after 2004. Tier 2 standards will be divided into seven different classifications according to the degree of pollution. Vehicle manufacturers must select an appropriate emissions standards classification based on car model, and must also ensure that nitrogen oxides (NO_X) emission for every car sold from their factory do not exceed an average of 0.07 g/km.

In Europe, light vehicle diesel emissions standards are being gradually tightened through a five-stage process. Of these, the Euro II-DI standards were implemented in 1999, and Euro III and Euro IV standards will come into effect in 2000 and 2005, respectively. In Japan, light vehicle diesel emissions standards were put in place in 1997 and have since been gradually tightened. The Japanese Central Environment Committee recently decided to implement even stricter control limits in 2002.

Liberalization of Taiwan's diesel vehicle market will occur two years after the island accedes to WTO. After comparing regulations in different countries, the VRTC presented two scenarios that depend on the speed of Taiwan's WTO entry. The VRTC has suggested that if WTO entry goes smoothly later this year, then Taiwan's existing Stage-Three standards for gasoline-powered vehicle emissions will be used as the model for diesel emissions standards. This approach will not only allow urban areas to gain better control of NO_X pollution, it will also avoid placing too heavy a burden on existing domestic vehicle manufacturers.

However, if Taiwan's WTO accession is delayed, the VRTC recommends that a different approach be taken. Because liberalization will not occur until two years after entry, this timeline should coincide with

Stage-Three Light Vehicle Diesel Emissions Standards – Draft (g/km)

Case	Reference Standards	CO	NMHC	NOx	PM	Comments
A	Taiwan's Stage-Three Gasoline Emissions Standards	2.11	0.155	0.25	0.05	• Scheduled for implementation later this year, following WTO entry. • Will be the same as emissions standards for gasoline-powered vehicles
B	US Tier 2 Standards	1.3125	0.0437	0.0063	0.0068	• If WTO entry is delayed until 2004, standards will follow US Tier 2 standards. • Beneficial to NO_x control in urban areas.

the implementation of new diesel emissions standards in the US and Europe. In this circumstance, Taiwan should strive to protect urban air quality by directly adopting standards that closely parallel the US Tier 2 standards (see accompanying table).

Industry representatives at the November 30 meeting did not have many opinions in response to the VRTC's recommendations. They did point out, however, that the US Tier 2 standards will not go into effect until 2004, and even then implementation may not occur according to schedule. Because the engines of vehicles made in Taiwan are all imported, the implementation date of diesel emissions standards must be later than those in Europe and the US.

The EPA agreed with industry's viewpoint and further emphasized that the date of WTO entry is the most crucial element in deciding when to announce new standards in Taiwan.

Energy Star Certifications to Begin in July

Based on an ROC-US cooperative agreement signed in July of 1999, the USEPA has entrusted the ROC with plans for carrying out the Energy Star program. After initial consultations, the Taiwan EPA has selected office supplies for the first wave of the program. In the future, Energy Star applications will be standardized along with those in other countries. This means that applications will be free and verification materials will be provided by the applicant. Currently the EPA is in the process of translating the application materials to Chinese and expects to begin officially receiving application in July of this year. The EPA plans to use this program to promote energy conservation and provide impetus for Taiwan's participation in international activities.

In July of 1999, the Taiwan EPA (TEPA) and United States EPA (USEPA) signed the *Implementing Agreement # 4 for Technical Cooperation in the Field of Environmental Protection*. One item in the agreement empowered the Taiwan EPA to manage use of the Energy Star label in the Taiwan region. To move forward with this plan, on December 8, 1998 TEPA invited US and world representatives to discuss measures to introduce and expand this system in Taiwan.

The Energy Star program was the result of joint cooperation between the USEPA and US Department of Energy in 1992, and draws on participation from the manufacturing and retail sectors. The goal of the program is to promote energy conservation and reduction of green house gases. After years in practice, Energy Star is now used in places such as Europe, Australia, New Zealand, Sweden, and Japan, and has become an internationally recognized label for energy conservation.

The US Energy Star program has been opened to products in eight categories, including: household appliances; emergency exit signs; heating and refrigeration products; household electronics; office equipment; household lamps; transformers; and doors and windows.

After initial consultations, TEPA decided on office equipment for the first wave of Energy Star products promoted here. There are seven categories of office equipment, including: computer equipment; monitors; printers; fax machines; copiers; scanners, and multifunctional devices. TEPA noted that after the initial round of products opened, in the future, Energy Star will be gradually be opened for daily-use and high energy consumption products.

After discussions with the USEPA, it was decided that the future structure of Taiwan's Energy Star program would be the same as other international programs. Thus, application to use the Energy Star label is initiated voluntarily and its use totally free. In principle, all application documents are submitted in good faith by the applicant. After receiving the application, all reviews are completed within two weeks, exactly as in other countries.

To smoothly introduce this system, the EPA has already contracted the Environment and Development Foundation, the Environmental Quality Protection Foundation, and the Energy and Resources Laboratory of the Industrial Technology Research Institute for joint work on furthering the system. Currently this entails translating relevant Energy Star documentation into Chinese. It is expected that application will formally begin in July of this year. TEPA has also begun assessing product categories in anticipation of the second wave of Energy Star.

TEPA noted that Energy Star is by nature an international system. Its introduction to Taiwan, in addition to raising domestic energy efficiency and reducing emissions of green house gases, is also an effective method for removing export obstacles to Taiwanese products.

Furthermore, TEPA officials emphasized that based on the content of the cooperation agreement signed between the US and other countries, if the US wishes to set or change Energy Star product standards it must first obtain a consensus from all participants. For this reason, Taiwan's introduction of the Energy Star system increases the channels available for cooperation with other countries and provides an opportunity to raise Taiwan's international standing.

EPA Urges Local Governments to Get Electric Bikes on the Road

The EPA has set sales targets of electric motorbikes (e-bikes) for various county and city governments, and estimates that by the end of the year sales of e-bikes will reach 7,600. Five local governments have already reached goals for this FY, and 5,261 e-bikes have already been registered. A number of local governments have also offered independent subsidies in hopes of meeting targets.

In the last few years the EPA has decided to promote electric motorbikes (e-bikes) as an important way to improve urban air quality. Besides providing a generous subsidy to consumers purchasing e-bikes, the EPA has requested that beginning January of this year 2000 sale of e-bikes must make up over 2% of total sales volume by motorbike vendors.

To continue getting e-bikes on the streets, during the past fiscal year (FY) the EPA asked all environmental protection bureaus (EPBs) to come up with a budget for promoting e-bikes. The budgets are determined based on factors such as population and size of the local air pollution fund. In cities or counties with large numbers of motorbikes, such as Taipei and Kaohsiung Cities, the EPA set a quota of 500 e-bikes, and in areas with fewer motorbikes, such as Hsinchu and Miaoli Counties, the target was set at 200.

According to EPA plans for the second half of 1999, an additional 7,600 e-bikes should be put on the road by the end of the year. On top of the 5,000 already out there, by the end of 1999 e-bikes should have broken the target mark of 10,000. To ensure that local governments meet their year end targets, the Bureau of Air Quality Protection and Noise Control recently invited local EPBs to report on their current progress.

According to EPA statistics for the second half of 1999, as of the end of October, Taipei, Kaohsiung, and Hsinchu Cities, and Taoyuan and Tainan Counties had already exceeded their set quotas for the number of registered e-bikes. After only four months, an additional 5,261 e-bikes had been registered, closing fast on the 6 month target of 7,600. Officials from the Air Bureau were optimistic in predicting that there would be no problems in meeting progress goals for this year.

The EPA is also urging cities and counties falling behind their targets to pick up the pace of their efforts. In order to support the e-bike initiative, besides the original EPA subsidies for e-bikes, Taoyuan, Hsinchu, Pingtung, I-Lan, and Taitung counties have already proposed their own subsidy measures for e-bikes purchased during this fiscal year. The subsidies range between five and ten thousand NTD. Expenditures by local governments in promoting the e-bike initiative this year came close to reaching 180 million NTD.

From the publics perspective, the most frequent complaint against e-bikes is the inconvenience of recharging them. For this reason in addition to the sale of e-bikes themselves, city and county governments are also promoting the installation of recharge stations. Estimates are that by the end of the year a total of 2,135 recharge stations will be installed for the use of e-bike owners.

Environmental Policy Monthly, Taiwan, R.O.C.

Publisher
Dr. Hsung-Hsiung Tsai, Administrator,
Environmental ProtectionAdministration

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

Editorial and translation support provided by:
Hui-kuo Consulting, Ltd., Productivity Asia, Ltd.

The EPM is available free of charge on the EPA website (*www.epa.gov.tw*). For inquiries or subscriptions to the printed version, please contact:

Environmental Policy Monthly
Environmental Protection Administration
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: epm@sun.epa.gov.tw

¦æ¬F°|·s»DS½¥X ªº©µn°0ÃÒS½ª©¼_¥«»x¦r²Ä³ù³°³ù³ù¸ ¹