

# Environmental Policy Monthly



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## *In this issue . . .*

### *Feature Article*

#### **Administrator Lin Outlines Priorities for New Administration ..... 6**

After newly assuming the post of EPA Administrator, Dr. Edgar Lin, Ph.D. emphasized the new government administrations commitment to environmental protection. He also indicated establishment of a Ministry of Environment and Resources, treatment of industrial waste, working with industry and environmental groups, and int'l cooperation as priorities for his administration.

#### **Taiwan Contributes to Sustainable Development in Central America ..... 2**

On April 26 a joint conference, "Integrated Environmental Planning for Sustainable Development in Central America," was held to encourage environmental cooperation with Central American countries. Environmental Ministers from Central American countries were invited to the conference and a joint declaration released at it's conclusion, opening the way for Taiwan's participation in the Kyoto Protocol's CDM.

#### **Public Hearing Held on GHG Control Act ..... 3**

The EPA has proposed a draft *Green House Gas Control Act*. According to the draft, in the future the EPA will set control policies, compile an emissions inventory, establish an emissions trading system, and require major emitters to obtain permits from the EPA.

#### **Taiwan's Agenda 21 Document Set ..... 4**

The EY recently passed a draft of Taiwan's Agenda 21. The document includes sections on sustainable environment, society and economy, as well as capacity building and promotion mechanisms. This document will serve as the administrative outline for the promotion of sustainable development activities in Taiwan.

#### **EPA Drafts Supporting Laws for Marine Pollution Control Act ..... 4**

While the draft *Marine Pollution Control Act* is under review by the Legislative Yuan, the EPA has begun putting together supporting laws and an emergency response plan for marine pollution.

#### **Recycling of Computer Printers to be Kicked off in January 2001 ..... 5**

In January 2001 the EPA will begin enforcing the recycling of computer printers. At a public hearing, the EPA stated that recycling rates will be set according to print-

ing or printer dimensions.

#### **Toxic Chemical Accident Drill Conducted ..... 8**

The EPA recently staged its annual toxic chemical accident response drill in Hsin-Chu County. The drill was divided into two parts, a simulation and a live exercise.

#### **River Basin and Marine Management Plan Submitted to Executive Yuan ..... 8**

Goals of the plan include the reduction of the total length of heavily polluted rivers by 7.9% and an increase in the island-wide sewer hook up rate to 35%. The plan will require an 11-year budget of NTD147.1 billion, most of which will be targeted at sewer system build out.

#### **Small Steps Toward Improving River Quality ... 9**

According to a 1999 report, of 50 major rivers, seriously polluted sections decreased by 1.5%, and unpolluted river sections increased by 2%, demonstrating small progress in improving river water quality.

#### **Control Strategies for Difficult to Recycle Containers Discussed at Public Hearing ..... 10**

The EPA is revising container recycling policies and is considering adjusting recycling measures to accept both recycling of constituent materials and recovery of calorific heat value.

#### **UV Forecasting System Upgraded A Notch ..... 11**

To upgrade UV forecasting, the EPA began installing third generation monitoring stations in May of last year.

#### **News Briefs ..... 11**

#### **Recycling of Fluorescent Light Tubes to Begin July 2001 ..... 12**

Straight light tubes will be the focus in the first stage of recycling, while the second stage, slated for a July 2002 roll out, will target bulb-style fluorescent lights, electric light bulbs, and high luminosity light sources.

## *Taiwan Contributes to Sustainable Development in Central America*

**On April 26, 2000 a joint conference was held by the EPA and the Inter-American Association of Sanitary and Environmental Engineering, to encourage environmental cooperation with Central American countries. Ministers and officials from environmental agencies in six Central American countries were invited to the conference on, "Integrated Environmental Planning for Sustainable Development in Central America," and a joint declaration released at it's conclusion. This conference has strengthened the base of environmental cooperation between Taiwan and Central America, and will open the way for Taiwan to participate in the Kyoto Protocol's clean development mechanism.**

In July of 1999 the EPA developed the Central American Environmental Cooperation Plan to improve the exchange of environmental technology and to open opportunities for Taiwan to participate in multinational emissions reductions through the Kyoto Protocol's clean development mechanism (CDM). Under the framework of this plan, a series of recent discussions resulted in a decision to hold a conference titled, "Integrated Environmental Planning for Sustainable Development in Central America," on April 26, 2000 in El Salvador's capitol, the city of San Salvador. The conference was intended to further promote cooperative activities between Taiwan and Central American countries. The plan includes a second phase set to begin this summer in Puerto Rico with the "MARKAL-MACRO Model Training Course," to train users of the model in Central American countries. MARKAL MACRO models can be used to analyze social, energy and economic factors and their relation with green house gas emissions and sustainable development.

The plan was organized mainly by Taiwan, with assistance from the Central American Environmental and Sanitation Engineers Association (AIDIS), to be carried out over two phases. The first phase consisted of organizing the "Inter-American Association of Sanitary and Environmental Engineering." Ministers and officials of environmental and resource agencies from Belize, El Salvador, Guatemala, Honduras, Nicaragua, and Panama were invited to attend the conference. In total, over 60 persons attended the conference, also including officials from the System Integration for Central America (SICA), the US Department of Energy and the US EPA.

A total of eight Taiwanese representatives were led by then EPA Administrator Tsai Hsunhsung, and included delegates from the EPA, the

Government Information Office, and the Industrial Technology Research Institute. The Taiwan embassy in El Salvador helped schedule meetings and accommodations for the Taiwan delegation while staying in San Salvador.

The conference was preceded with an opening banquet the night of April 25, and officially began with an opening ceremony the morning of April 26 at the El Salvador Hotel. El Salvador's Minister of Environment and Natural Resources, Anna Maria Majano, and Administrator Tsai opened the conference by welcoming the guests from all countries. Afterwards, the conference was broken into two smaller groups. Bilateral discussions were begun between Administrator Tsai and Central American delegation leaders to exchange experiences on environmental protection and explore opportunities for bilateral cooperation. At the same time, other representatives briefly introduced their countries energy and environmental situation, and the Taiwan representative made presentations on, "Taiwan's Strategy and Outlook for Meeting the Framework Convention on Climate Change," and, "Taiwan's Application of the MARKAL-MACRO Model."

On the morning of April 27 conference participants signed a joint declaration including:

- The Ministers of the Environment of Central America recognize with satisfaction the ROC's initiative toward global climate change, and express their interest in establishing a cooperation regime with the ROC in subjects related to sustainable development.
- The Ministers of the Environment of Central America recognize that sustainable development is a challenge to the developing economies in Central America and that MARKAL-MACRO model can be used to identify the crucial linkages between energy-environmental-economic problems and can facilitate the development of market based environmental management programs. Quantitative analysis of specific projects based on joint model-runs can also be used to identify investment opportunities in Central America that will generate low-cost reductions in greenhouse gas emissions.
- The ROC is willing to provide technical assistance in developing national and regional versions of the MARKAL-MACRO model. The technical products of these models will allow the Central American nations to explore co-benefits of integrated planning and implementation of policies on a variety of multi-media environmental issues. These include,

but are not limited to, mitigation in greenhouse gas emissions, pollution prevention, air-quality management, and waste management.

- Participating Central American countries are willing to assign technical personnel to be trained, with the support of ROC, in the management of MAKAL-MACRO model. Following the training course all speed will be taken to initiate planning of follow-up cooperative projects.

After his return to Taiwan, Administrator Tsai expressed that the conference was received enthusiastically by Taiwan's Central American allies. Most delegations were personally led by their country's environmental minister, reflecting the high level of interest in the conference topics and activities. In addition, SICA formally invited Taiwan to attend its environmental ministers meeting. This will lay a firm basis for future bilateral or multilateral environmental cooperation between Taiwan and Central

America.

Administrator Tsai also pointed out that Taiwan has considerable experience in the development of small and medium-sized enterprises, and good results introducing and applying the MARKAL-MACRO model. Sharing Taiwan's experience will help Central American allies to develop their economies while laying plans for a regional sustainable development strategy for "environmental protection, energy efficiency, and economic development," to reduce green house gas emissions.

In addition, Taiwan will use make use of CDM to strengthen cooperative relations with Central American countries. In the most likely future scenario, Taiwan will develop policies to encourage Taiwanese business to invest or provide technology to Central America to reduce green house gas emissions, with emissions credits earned shared between both sides. 

## *Public Hearing Held for Draft Green House Gas Control Act*

**Based on a resolution from the National Energy Conference, the EPA has proposed a draft *Green House Gas Control Act*. According to the draft, in the future the EPA will set control policies and compile an emissions inventory. Furthermore, major emitters will require permits from the EPA. The draft also provides for establishment of an emissions trading system. The draft is currently in the initial stage of composition and review.**

There is a growing international trend to control green house gas (GHG) emissions, and for each country to fulfill their responsibilities as a member of the global village. For this reason, the EPA has composed a draft *Green House Gas Control Act* based on resolutions from the 1998 National Energy Conference. On May 1 the EPA held a public hearing to discuss the draft with all interested parties.


The draft, consisting of six chapters and 25 articles, clearly defines GHGs to include: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>) gases. Six sources of GHG emissions are also identified, including: energy use, industrial production, agricultural activities, solid waste management, solvents and other products, and others to be listed by the EPA.

In terms of overall structure, the draft mandates that the EPA must keep statistics on emission

quantities, compile a national emissions inventory, and devise a national GHG control policy. Local government agencies must set and enforce GHG action plans.

All enterprises generating sufficient quantities of listed GHGs must obtain emissions permits from the EPA, regardless of whether the source is existing, modified, or newly installed. GHG emissions will be controlled on a total quantity basis. To provide enterprises with economic incentives for emissions reductions, the act provides a mechanism for offsets, trade, or banking of obtained emissions credits.

An EPA official pointed out that the draft also addresses the need to reduce consumption and conserve energy. For this reason, the draft encourages all government agencies to purchase internationally standardized high energy efficiency products, such as Energy Star or Green Mark products.

The EPA especially stressed that this draft Act proves Taiwan's active participation in GHG relief activities and membership in international society. As the current draft is still in the initial stage of composition and review, in the future more experts will be contracted to follow international developments and exchange ideas with related parties. The pace of the draft's legislation will be adjusted in step with international trends. 

## *Taiwan's Agenda 21 Document Set*

**In the spirit of the United Nations Agenda 21, the Executive Yuan recently passed a draft of Taiwan's Agenda 21. The document includes sections on sustainable environment, society and economy, as well as capacity building and promotion mechanisms for sustainable development. In doing so, it provides a detailed picture of the future of sustainable development in Taiwan. In addition, this document will serve as the administrative blueprint for the promotion of sustainable development activities in Taiwan.**

The Executive Yuan (EY) has recently passed the *Agenda 21 – Policy Framework for Sustainable Development in the Republic of China*. This document will serve as the future administrative blueprint for promotion of sustainable development in Taiwan.

The United Nations Agenda 21 was passed at the 1992 Earth Summit to act as a guiding document for countries promoting sustainable development. Following, national governments have created specific agencies tasked with the promotion of sustainable development. Each country has developed guiding documents depending on the unique needs of their national character, society, economy and environment. These efforts are key in ensuring the successful co-existence of economic, social, and environmental development.

At the present, of the over 180 countries across the world, 146 have established national level sustainable development commissions or other related agencies. Furthermore, over 100 have completed national Agenda 21 or national sustainable development strategy documents. A total of 14 top level central agencies and over 30 NGOs and experts were mobilized during the formulation of Taiwan's *Agenda 21 – Policy Framework for Sustainable Development in the Republic of China*. Against the background of the recent government change, the draft's passage demonstrates the broad support for sustainable development by

all parties in Taiwan.

The EY's National Council for Sustainable Development (NCSDD) was established in August of 1997, and restructured in May of 1998. The restructuring included installation of an Agenda 21 Working Group charged with drafting the *Agenda 21 – Policy Framework for Sustainable Development in the Republic of China*.

The Agenda 21 document passed by the EY contains an overview and five main chapters, including sustainable environment, sustainable society, sustainable economy, capacity building, and promotion mechanisms. Their respective contents are as follows:

1. Sustainable environment: includes sections on atmosphere, water resources, soil and land resources, marine protection, biodiversity, and environmental management
2. Sustainable society: includes sections on population and health, living environment, social welfare, protection of cultural assets, and disaster prevention and relief
3. Sustainable economy: includes sections on economic, industrial and transportation development, energy policy, resource use, and toxic substance management.
4. Capacity building: includes sections on the development of education, S&T, and building an information based society
5. Promotion mechanisms: includes public participation, government restructuring, and international cooperation

An EPA official expressed that in the future, Agenda 21 will give government agencies a working basis to promote sustainable development, as well as providing a mechanism for joint public participation. Members of the public interested can obtain information on the NCSDD webpage at <http://pika.epa.gov.tw:8800/nsdn/nc/index.htm>. ☺

## *EPA Drafts Supporting Laws for Marine Pollution Control Act*

**While the draft *Marine Pollution Control Act* is under review by the Legislative Yuan, the EPA has begun putting together the content for supporting laws and an emergency response plan for marine pollution. In regards to the classification of marine areas, researchers have initially recommended eight divisions. A multi-level organization for emergency response to marine pollution incidents will be also established. All regulatory drafts should be finished by the end of the year.**

On May 22 the EPA convened a meeting to discuss establishment of supporting laws for the *Marine Pollution Control Act*. During the meeting, initial classifications of marine areas were made to facilitate their management. Marine areas will be divided into eight classifications, such as recreation or aquatic farming. After in depth discussion with all parties, noted Deputy Director Lin of the Water

Quality Protection Bureau, preliminary results will be available before the end of the year.


A draft of the *Marine Pollution Control Act* was passed at a full meeting of the Executive Yuan in April. The draft is now being reviewed by the Legislative Yuan, and if passed will officially incorporate the marine environment into Taiwan's regulatory regime. The draft designates EPA responsibility for establishing control areas and control standards for the marine environment. The EPA has in turn contracted this work to consultants and Chung Shan University. In addition to these regulations, drafts of implementation rules and an emergency response plan for marine pollution should all be finished before the end of the year.

Professor Yang Lei, in charge of the research being done at Chung Shan University, expressed that classification of marine regions should be made in consideration of their usage. Based on foreign practices and domestic needs, initial recommendations are for eight classifications, including: recreation, aquatic farming, marine dumping, conservation, effluent discharge, special scenic areas, and river mouth areas. Under this system, enterprises involved in ocean disposal will only be permitted to operate in marine dumping areas. Similarly, effluent discharges into the ocean will only be allowed in areas classified for effluent discharge.

Article 10 of the draft *Marine Pollution Con-*

*trol Act* provides for an emergency response plan for marine oil spills. The plan must ensure that cleanup of marine oil spills is done "promptly" and "efficiently". Currently, other countries such as the US, England and Canada all have emergency response measures for handling oil spills. In addition, in 1990 IMO members signed an international convention for cooperation on oil pollution prevention. The convention establishes an international mechanism for cooperation and joint handling of marine oil pollution.

The EPA noted that although Taiwan has no way to join such an international organization, it should still have a national level incident control system. In the future, appropriate response measures will be set-up along the central, district, and local levels of government. At the central level, the EPA's "Central Response Center" will monitor and evaluate oil spills, while the local "Coastline Response Centers" will be responsible for carrying out incident response.

An EPA official pointed out that major work, such as an experts meetings, has already been carried into the second stage, and preliminary results will be available by the end of the year. After a public hearing in October, first draft materials will be discussed and reviewed again. These will form an important basis for the setting of future regulations. 


## ***Recycling of Computer Printers to be Kicked off in January 2001***

**Beginning January 2001 the EPA will begin enforcing the recycling of computer printers. At a recent public hearing, the EPA stated that recycling rates will be set according to printing or printer dimensions, and that printing materials will not be recycled for the time being.**

The EPA has listed notebook computers, hard disks, motherboards, power suppliers, PC casings, and monitors as designated recyclables. Results have been impressive. As of April 30, 2000, around 840,000 PC central processors, monitors, and notebooks have been recycled, a recycling rate of around 70%.

EPA statistics indicate that in 1999, 1.01 million printers were sold in Taiwan, and this year, the number of units purchased is expected to exceed 1.16 million. Considering that the life-span on these products is only about 2 years, the need for recycling measures is urgent. For this reason, in addition to PC and notebook computers, the EPA expects

to begin recycling laser, bubble, and dot-matrix printers beginning January 1, 2001. On May, 23 the EPA convened a public hearing to discuss the future comprehensive recycling of printers with relevant business sectors.

According to a resolution from the public hearing, materials used in printing, such as carbon powder cartridges or ink cartridges, will temporarily not be included in the recycling program. In addition, the printer and printing dimensions will be used as the basis for listings and calculation of recycling fees. The organization responsible for setting recycling fee rates, the China Economic Research Institute, stated that because of the number of parts in a printer and variation of components between printers, initial indications suggest recycling fees will fall somewhere between 97 and 205 NT dollars per printer. However, further factor analysis must be performed before a more accurate fee rate will be established. 

## Feature Article

### *Administrator Lin Outlines Priorities for New Administration*

After newly assuming the post of EPA Administrator, Dr. Edgar Lin, Ph.D. emphasized the new government administrations commitment to environmental protection, and pointed out that the EPA should no longer play a decorative role. In addition to asking his new colleagues to break from their old way of thinking, he indicated that establishment of a Ministry of Environment and Resources, proper treatment of industrial waste, encouraging industry to shoulder their environmental responsibility, improving communications with environmental groups, and promoting international cooperation would be the priorities for his administration.

After the new government administration took power on May 20, Dr. Edgar Lin, Ph.D. officially assumed office as the new EPA Administrator. Administrator Lin met the same day with top level EPA officials and expressed his hopes that he could come to understand the progress of environmental work as soon as possible. He pointed out that in his inaugural address President Chen clearly stated that his government would give priority to solving crime and environmental problems. Administrator Lin expressed his hopes that his new colleagues could break free from old frames of mind, old values, and use innovative approaches to break through current difficulties and prepare for future challenges. Administrator Lin also encouraged all department heads to raise the morale of their colleagues, build public consensus on the environment, put in place environmental education, and work together to create new vistas in environmental accomplishments.

Administrator Lin pointed out that the 20<sup>th</sup> Century was marked by the struggle between communism and capitalism, but that the 21<sup>st</sup> Century will be defined by the clash between ecologism and capitalistic industrialism. The Administrator said that he firmly believes in the end ecologism will prevail over industrialism, and sincerely hopes that his new colleagues at the EPA feel this trend and fight together to sustain it. He also hopes that they can get the new government running on track as soon as possible.

On the following Monday, June 22, Administrator Lin opened a meeting with his new colleagues by announcing the birth of the "New EPA". With new knowledge, thinking, and the birth of a new Century, Taiwan is marching to-

wards the beginning of a new era. He pointed out that in the future the EPA will not play a merely decorative role in the new government, and encouraged his new colleagues to rely on their professional knowledge to rise above partisan thinking and empower the EPA with it's government granted powers. He encouraged them to raise high the voice of environmentalism and declare their love for Taiwan's land. Furthermore, he said that realization of a, "clean and comfortable living environment" for Taiwan's citizens should be their first goal.

Administrator Lin noted that by looking at the world from the perspective of the ecological and evolutionary sciences, just as greater complexity and diversity create a more stable ecology, he encourages his colleagues to express more of their professional opinions. He pointed out for example, that in regards to the controversial construction of the fourth nuclear power plant, he favors a "small is beautiful" approach. That is, he is not opposed to construction of power plants, but that one plant would dominate a majority of the power supply. Energy development should be done in the most efficient, diversified method possible, according to the characteristics of particular demand needs. At all costs, a "what I say goes" attitudes and decision making in politics should be avoided. He also asked his new colleagues to break free from rigid, bureaucratic thinking, and use innovative approaches and thinking to inspire a new era of environmental conservation.

In terms of his future administrative priorities, at the meeting Administrator Lin brought forward eight problems requiring immediate attention. He stated that the EPA should:

1. be brave in speaking their professional opinions
2. avoid an authoritarian central government attitude, and respect local environmental enforcement efforts
3. integrate environmental protection in community development
4. encourage local communities to use "civil suit" clauses in environmental legislation to supervise the government, and inspire their concern over environmental matters
5. make the public understand the rela-

## Feature: Short Biography of Administrator Lin

Dr. Edgar Lin, Ph.D, was born in 1938 in Taipei, Taiwan, and has worked for over 25 years on the issues of ecology, evolution and biodiversity in Taiwan. On May 20, 2000 Dr. Lin officially assumed the post of Administrator of the Environmental Protection Administration.

Dr. Lin has been educated both in Taiwan and abroad. He received a BA in foreign literature from National Taiwan University, a BS in biology from Goshen College in the United States, and his Masters and Ph.D. in biology from Indiana University.

Dr. Lin has enjoyed a broad range of experiences, covering the government, academic, and NGO sectors. In the government arena, Dr. Lin has previously served as Director of the Taipei City Department of Environmental Protection, has been a National Assembly representative, and run for elected office with the Democratic Progressive Party in Taichung. Dr. Lin has served in academic institutions around the world, such as Ben Gurion University (Israel), Lund University (Sweden), and headed the ecology division at Indiana University. In addition, he has held a number of teaching po-

sitions in Taiwan, such as Chair of Tunghai University's Biology Department, and as Director of Tunghai University's Environmental Research Center.

Dr. Lin's work with environmental conservation groups is equally diverse, having directed such well known local groups as the Environmental Quality Protection Fund, and the Taiwan Green Peace association. His experience with NGOs abroad includes founding and leading the Asian Ecology Society, work in research institutes such as the Natural Resource Defense Council, and capacity building efforts in Kenya.

Dr. Lin has been distinguished on numerous occasions for teaching excellence and contributions to the field of environmental conservation. In addition, he has composed a number of scholarly works, and in a 1989 poll by the China Times, the "Collected Works of Edgar Lin", was chosen as one of the top ten best books. He is also an expert on the reproductive ecology of lizards. He wrote both "Lizards of Taiwan" and "The Tadpoles of Taiwan" with Dr. Cheng and Dr. Chou, respectively.

tionship between environment and health, and instill in them a sense of self preservation

6. strictly check and evaluate environmental impact assessments to see that they faithfully implemented

7. improve the enforcement of environmental regulations

8. make the best use of current resources; strengthen R&D mechanisms

As for medium-range goals, Administrator Lin listed the following four work items:


1. integrate conservation and pollution prevention efforts through the establishment of a Ministry of Environment and Resources

2. resolve treatment and illegal dumping problems for industrial waste

3. encourage industry to shoulder a larger share of the environmental burden, and let the EPA serve as a bridge between environmental groups and industry to consolidate the strengths of both

4. use environmental affairs to establish international cooperative relationships and exchange of experience.

Administrator Lin also spoke of his long-term goals. In particular, he expressed hopes that within 20-30 years Taiwan can fulfill comprehensive national planning and sustainable management goals.

Administrator Lin pointed out that in his life, the greatest personal satisfaction has come from working with his colleagues to create a clean living space in Taipei City during his time as Director of the Department of Environmental Protection. He hopes that in the time ahead, his new colleagues can provide him with the most accurate information, facts, and regulatory standards, and allow him to shoulder the political burden of making environmental policies fully open and transparent. Together, they can work to create a clean and comfortable living environment for Taiwan in the new century. 

## ***Annual Toxic Chemical Accident Drill Conducted***

**As part of its efforts to prevent toxic chemical accidents, the EPA recently staged its annual response drill in Hsin-Chu County. The drill was divided into a simulation and a live exercise. Following the drill, the EPA asserted that Taiwan's toxic chemical accident prevention system shall continue to be built up and response techniques shall continue to be honed.**

The EPA actively works to prevent the occurrence of toxic chemical accidents. As part of this effort, the EPA on May 17 cooperated with the Hsin-Chu County government and the Industrial Technology Research Institute (ITRI) to stage the "2000 Annual Island-wide Toxic Chemical Accident Prevention Exercises."

EPA officials reported that during the drill, a major element of the simulation phase of the exercise involved an area-wide incident. The focus was on the mobilization and orchestration of emergency response personnel. In the event of a real emergency, the county government becomes the emergency response management center with the duty of dispatch and coordination. The County Chief is the acting Coordinator and has the responsibility of coordinating the emergency response activities of all relevant units. These actions must be made jointly with response system members and other neighboring facilities. All of these elements were simulated during the recent drill.

The second part of the exercises was the live drill—an opportunity to display emergency response procedures. Here, the key element was the demonstration of on-site implementation of response measures, coordination of response activities, and mutual support efforts. These included toxic chemi-

cal accident response drills performed by the Joint Emergency Response Team and disaster containment and life-saving drills performed by the county fire department.

According to EPA statistics, Taiwan has never experienced a major toxic chemical accident, but the government cannot rule out the possibility of such a disaster occurring. Measures must be actively taken to effectively prevent such incidents. In addition to this type of drill, the EPA regularly monitors local government staging of "snap" onsite TCS release drills.

The EPA has also been aggressively implementing an "Industry Joint Response System." The key pillar of support in this system is the collaboration and mutual assistance attitude on the part of industry. The Joint Response System currently has 36 teams, with participation by 337 factories.

EPA officials further noted that response capabilities are constantly being built up. Such efforts include establishing emergency response advice and support networks. Round-the-clock technical support and advice centers have been established, emergency response procedure cards have been issued, and a Chinese-language emergency response database CD-ROM has been completed. Moreover, the EPA has been implementing a joint Taiwan-US cooperation plan. Software to simulate the spread of a toxic release has been cooperatively developed, becoming the first such modeling software to be completed locally. This software can be used in training and in the drafting of response plans, and acts as a crucial reference tool for personnel on the front-lines of toxic chemical accidents. ♻️

## ***River Basin and Marine Management Plan Submitted to EY***

**The EPA recently completed draft measures to manage and control potentially polluting activities within river basins and marine areas. Goals of the plan include the reduction of the total length of heavily polluted rivers by 7.9% and an increase in the island-wide sewer hook up rate to 35%. For implementation, the plan will require an 11-year budget of 147.1 billion NT dollars, most of which will be targeted at sewer system build out. The plan has been sent to the Executive Yuan for review.**

The EPA recently drafted a comprehensive plan titled the River Basin and Marine Management Plan. Between 2001 to 2011, the plan seeks to increase the total length of unpolluted river sections

by 70%, reduce heavily polluted sections by 7.9%, and remediate polluted marine areas. The slated budget for this 11-year plan equals 147.1 billion NT dollars. Of this, NT\$146.78 billion will be spent on remediation of rivers, while NT\$360 million will be used to remediate coastal areas.

The plan has been classified as a comprehensive national plan. Of the 11-year budget, the EPA will control only 14.94 billion with the rest managed by various other government agencies. Officials have indicated that the purpose of spending such a large sum of money is to further Taiwan's sustainable development. The *National Environmental Pro-*



*tection Plan* has set the following goals for the year 2011 (the 100<sup>th</sup> anniversary of the founding of the Republic of China): 30% of planned Grade A river sections will obtain Grade A quality water, and 70% of planned Grade B river lengths will obtain Grade B quality water; unpolluted river lengths will increase by 70%; and, heavily polluted river lengths will decrease by 7.9%. The management plan's strategy and measures have been constructed with the aforementioned goals in mind.

The government has recently been criticized as lagging behind many other countries in terms of sewage hookup rates. Not only does Taiwan trail Europe and the US, but developing countries such as Malaysia, the Philippines, and Indonesia are also ahead of Taiwan on sewerage system build out. In response, the government is planning to earmark NT\$106.18 billion for sewerage system construction. Priority areas will include Chi-Mei, Ta-Shu and 10 other water source areas. Construction of systems in Taipei, Taichung and several other urban areas will also continue. And, public sewerage systems in the Tseng-Wen River and Shan-Hua areas will be newly constructed. There are also plans to establish county and city-level sewerage system operation organizations to improve protection and management activities. Through these efforts it is hoped that island-wide sewerage hookup rates will reach 35%.

The EPA pointed out that Taiwan's 1,400 kilometers of coastline provides habitat to nearly 10% of the world's marine species, something Taiwan residents should treasure and be proud of. According to recent EPA marine quality monitoring results,

coastline pH and dissolved oxygen levels are out of compliance 0.4% and 3.2% of the time, respectively. Biological oxygen demand (BOD) and phenol levels respectively exceed regulated standards 11.2% and 0.3% of the time. Moreover, heavy metals such as copper, zinc, and mercury exceed limits 5%, 2.1%, and 7.5% of the time, respectively. These pollution levels indicate the urgent need for marine area protection measures.

Taiwan's draft *Marine Pollution Control Act* was only recently sent to the Legislative Yuan for review and inclusion within the environmental protection system. The proposed management plan would set aside NT\$90 million per year for four years from 2001 to 2004 for the purpose of marine pollution control activities. The plan would also establish a framework for more comprehensive marine protection laws, strengthen environmental quality monitoring, establish a marine water quality database and advance warning system, and strengthen the measures for cleaning up spills and other acute sources of pollution.

The EPA's Bureau of Water Quality Protection indicated that a river basin comprehensive protection plan has been under implementation since 1993. To meet the objectives laid out in Taiwan's *National Environmental Protection Plan*, river protection and remediation efforts will continued. To protect marine ecosystems, the proposed management plan incorporates marine pollution control into existing river protection measures. Bureau personnel indicated that after compiling suggestions from various ministries and departments, the plan was submitted to the Executive Yuan for review. ♻️

## *In 1999, Small Steps Toward Improving River Quality*

**The EPA has completed the 1999 report on river water quality. Of 50 major rivers, seriously polluted sections decreased by 1.5%, and unpolluted river sections increased by 2%, demonstrating small progress in improving river water quality. These results also show the initial effects of recent pollution remediation measures.**

According to the 1999 report on water quality monitoring in Taiwan's 50 major rivers, water quality is better than the previous four years. Conditions observed in the report include: in comparison with 1995, 42.9 km of seriously polluted river-length has been improved to moderately polluted or unpolluted, a 1.4% improvement; and unpolluted

river-lengths since 1995 have increased 60.3 km, a 2% improvement.

Monitoring results from the 1999 report show that of 50 major rivers, 14 have seen increase in the length of unpolluted river, the entire reach of 12 rivers are unpolluted, and 36 rivers have no seriously polluted sections.

The EPA noted that in addition to industrial wastewater, municipal wastewater discharged without proper treatment in a sewage system is another major source of pollution to Taiwan's 50 major rivers. The EPA has already begun to coordinate with

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count and city governments to improve pollution source management for rivers with relatively poor water quality. The EPA has pointed out that to cure river pollution at its root, river basin based remediation plans are needed. Upstream pollution control efforts should concentrate on proper management to nurture water sources, preserve soil and protect watersheds. At the same time, middle and downstream work should focus on control of pollution sources and setting reasonable and effective strategies and measures to reduce pollution emissions.

In addition, to strengthening the management of river water quality, the EPA has formulated river basin management plans which have been sent to the Executive Yuan for approval. The plan includes

auditing and assisting city and county governments to strengthen river basin remediation, select rivers which are important water resources or with relatively serious pollution, actively promote the construction of sewage systems and enactment of pollution source controls, monitor river water quality, improve trash disposal, and carry out educational promotion efforts. These items are aimed at improving the environmental quality of Taiwan's water bodies, and to reach specific goals laid out in the *National Environmental Protection Plan*. Such goals include ensuring the sustainable use of river water resources, provision of safe drinking water for 17 million people, providing proper irrigation water for 250,000 hectares of farm land, improving the water quality of urban river-lengths, and creating an additional 0.5 square meters of green space for each person in Taiwan. 

## ***Control Strategies for Difficult to Recycle Containers Discussed at Public Hearing***

**As refuse incineration increases steadily in Taiwan, the EPA is once again revising discarded container recycling policies. Under the principle of lowering overall costs and maintaining fairness, the EPA is considering adjusting recycling measures to accept both recycling of constituent materials and recovery of caloric heat value.**

The EPA has to date targeted ten types of general containers for recycling. However, due to differences in recycling requirements for some containers and the increasing amounts of garbage being incinerated in Taiwan, the EPA organized a public hearing on April 27 to discuss plans to revise current container recycling strategies.


To better address the issue, the EPA has considered classification of difficult to recycle items into two general categories. The first category includes items such as disposable plates, containers and utensils. After use, these items are typically coated with food and oil residue that makes storage and processing more difficult. The second general category includes containers that are difficult to recycle because of their volume, such as yogurt-drink containers, paper boxes, antiseptic drink boxes, etc. Due to their overall low volume, but high rates of use, these items are also difficult and expensive to recycle.

EPA officials indicated that most environmental groups feel that less "environmentally friendly" containers should be assigned stricter limitations. Banning a certain type of container from use, how-

ever, might lead to an increase in the use of another type of container with uncertain environmental consequences. Another approach would be to use life-cycle analysis to set recycling fee rates and thereby achieve more environmentally beneficial outcomes.

In addition to product bans, the EPA is also considering the adoption of other measures. These include limiting use to certain industries and adjusting measures to include both recycling of constituent materials and energy recovery by revising recycling fees to include refuse treatment costs (such as incineration costs).

Another general category of difficult to recycle containers should be considered from the point of view of multiple material replacement problems. Under the principle of comprehensive social cost considerations, energy recovery measures may be adopted, but this requires evaluating whether materials can be easily burned or whether after recycling the constituent materials have any resale value, etc. All of these factors influence the establishment of recycling fee rates.

During the public hearing, the EPA expressed its hope that academics and specialists would research the aforementioned difficult to recycle categories, and discuss relevant issues with all sectors concerned. Conclusions that arise will form the basis of Taiwan's general container recycling policies. 

## ***EPA's UV Forecasting System Upgraded Another Notch***

As concerns over ultraviolet exposure become more prominent, the EPA has been actively establishing a monitoring system. There are currently 27 monitoring stations in place that provide daily forecasts on UV levels. To further upgrade forecasting, the EPA began installing third generation monitoring stations in May of last year. Expert forecast revisions were also initiated.

May and June mark Taiwan's "plum rain" season, and when the sun manages to peek through the clouds, ultraviolet (UV) levels often become dangerous. In mid-April this year, UV levels across the island often reached "excessive" levels, and the southern part of the island registered "dangerous" levels of exposure.


Taiwan has had a UV forecasting system in place since 1996. At this time the EPA began working closely with Taiwan's Central Weather Bureau to install and constantly upgrade monitoring devices across the island. Over the past four years, the number of monitoring stations has grown rapidly from 4 to 28, and the number of forecasting points has jumped from 16 to 49. Most recently, Taiwan has begun trial runs of a third generation forecasting system.

Through the cooperation of the EPA, the Environmental Quality and Education Foundation, and National Taiwan University's Global Change Research Center, an indexed UV forecasting system was put in place in May 1997. EPA officials noted that the first generation system's data processing functions lacked stability and often crashed. Due to constant reliance on technical oversight, the system

never reached a full state of automation.

Second generation systems were put in place in May 1998. Not only was the automation system repaired, UV indicator forecasting was raised to a higher level of accuracy. Computerized modeling capabilities allowed an increase in the number of forecasting points to 49: these included 2 special municipality points, 29 county and city points, 6 major offshore island points and 12 tourist destination points. In August of the same year, the EPA began daily forecasting and disseminating the results over the Internet.

The Director General of the EPA's Bureau of Environmental Monitoring and Data Processing, Hsi-Hao Chen, indicated that the pilot tests for the new third generation system began in May of last year. In addition to greatly increasing the number of monitoring stations, the new system incorporates expert revision of forecasts, thereby increasing flexibility. These improvements have reduced the number of forecasting errors and enhance the automation of the system, thereby making operation more convenient.

Director General Chen provided a further overview of the recent upgrade process. He pointed out that the first generation system helped the EPA garner experience; operation of the system left much to be desired but it was acceptable. The second generation provided the opportunity to analyze the compatibility of the monitoring system, and the third generation ushers in a more user-friendly system, with a higher degree of public accessibility. 

### ***News Briefs***

#### ***Water Quality Monitoring of Beach Swimming Areas to Continue***

This year, the EPA will cooperate with National Taiwan University's Oceanography Department to perform at least 100 water quality samplings at 10 beach swimming areas around the island. Initial monitoring targets include basic monitoring items, nutrient salts, biological items, etc. Director General of the EPA's Bureau of Environmental Monitoring and Data Processing, Hsi-Hao Chen, indicated that Taiwan's coastal recreation areas are becoming more heavily visited. In the future, the EPA will report on the water quality in major beach swimming areas to better ensure swimmer health and safety.

#### ***Dr. James J. Lee to Take on Post of Deputy EPA Administrator***

On May 23, EPA Administrator, Edgar Lin, con-

firmed that the new EPA Deputy Administrator would be Dr. James J. Lee, who is currently serving as the Director of Yi-Lan County's Planning Department. Dr. Lee's appointment has been approved by the Executive Yuan.

#### ***1999 Noise Complaint Statistics Show Taipei Noisiest, Penghu Quietest***

On May 3, 2000 the EPA released its analysis of noise complaints filed in 1999. The results show that Taipei City recorded the largest number of complaints – 6,559 cases, with second place held by Tapei County, at 4,696 cases. Overall, the total number of complaints increased by 14.3% over 1998 levels. 70% of all cases were filed in urban areas, indicating that city noise is a high area of public concern. 65% of all complaints were in response to noise from factories and amusement/leisure spots.

### Recycling of Fluorescent Light Tubes to Begin July 2001

Following recent research on the subject, the EPA has drafted plans to implement fluorescent light recycling in two stages. Straight light tubes will be the focus on the first stage, to be kicked off in July 2001. The second stage, slated for a July 2002 roll out, will target bulb-style fluorescent lights, electric light bulbs, and high luminosity light sources.

The era of recycling light sources such as fluorescent light tubes and electric light bulbs is gradually approaching. The EPA's Bureau of Solid Waste Management pointed out that light tube recycling has been under consideration for some time, but the main difficulty in implementing a recycling program is the large number of different types of light sources. To move forward on this issue, the EPA has planned to implement recycling in two stages. First, conventional straight fluorescent light tubes will be targeted, with recycling slated to commence on July 1, 2001. Due to the small number of facilities that can process recycled light tubes, however, the EPA has invited academic and industry representatives to discuss the best path to move forward.

After implementation of the first stage, the second stage will be kicked off in July 2002 and will expand the scope of the program to include bulb-style fluorescent lights, electric light bulbs, high luminosity lights, and other types of light sources.

More specifically, the EPA plans to include in the scope of the program lights containing environmentally harmful substances, such as halogen tungsten

lamps, mercury, sodium, ultraviolet and infrared bulbs. The materials expected to be recovered include glass, metals, non-metals, and mercury-containing substances. The domestic capabilities to handle the recycling of several of these materials is not yet mature, however. For example, technologies to treat mercury-containing and fluorescent substances do not exist locally. As a result, local enterprises hope that the EPA can shoulder some of the burden in developing these capabilities.

It is generally perceived that recycling regulations heavily affect importers. A representative of Taiwan's Lighting Industry Association noted that while attending an exhibition he learned that these types of recycling measures also exist abroad. They further expressed the hope that when setting recycling fee rates, the EPA undertake discussion with affected firms. If the fee burden isn't set too high, light bulb suppliers will be happy to support the program.

Solid Waste Bureau officials pointed out that according to principles laid out in Item 2 of Article 10.1 of *Taiwan's Waste Disposal Act*, the recycling of light sources such as fluorescent bulbs is a must. As for implementation of the recycling program, however, it will be necessary to take stock of local capabilities and requirements. The opinions and suggestions of concerned sectors will form the basis of future policy, and the EPA recommends keeping a watch for public hearings on the matter.

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