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Feature Article

Promoting Inter-district Cooperation on Refuse Treatment

To find refuse disposal solutions for remote areas or counties with a major part of land deemed ecologically important, the EPA has been actively promoting inter-district cooperation on refuse disposal, and has been assisting in the creation of models for inter-district transfers of refuse for treatment and disposal. With the guidance of the EPA, six city and county governments have so far agreed to participate in the inter-district cooperation scheme.

Currently there are 24 large-scale municipal waste incinerators operating in Taiwan, collectively incinerating approximately 6.5 million tonnes of household refuse and general industrial waste each year. These facilities are meant to solve waste disposal problems for the refuse generated by citizens every day, as well as to make the best use of each incineration plant's excess capacity by treating general industrial waste. In 2012, the 24 incinerators generated 3.06 billion kW hours of electricity, showing that incinerators are not only helping to solve the nation's waste treatment problems but are also providing a safe, steady and reliable alternative energy source.

Over 50% of the land in Nantou County, Hualien County and Hsinchu County is mountainous and designated as important watersheds and ecologically sensitive areas. The construction of incinerators in these jurisdictions runs up against the practical difficulties of procuring land and citizen protests. Other factors requiring consideration include the goal of shortening transport routes and the requirement that each incinerator must maintain a constant operating rate and be able to treat waste on a long-term basis. After evaluating these factors, it was decided that the construction of large-scale incinerators in Nantou, Hualien and Hsinchu counties could be suspended. The former practice of landfill was discontinued in 2007 except on outlying islands

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and remote areas, a step that had a great impact on counties or municipalities that do not have an incineration plant. In anticipation of repercussions, by the end of 2006 the EPA began promoting inter-district cooperation on refuse treatment to contract waste treatment between jurisdictions. This measure provided assistance to these three counties in order to ensure that waste generated within their jurisdictions could be transferred to other counties or municipalities that already have incineration plants.

The three outlying islands of Kinmen, Penghu and Lianjiang began to sequentially enter similar inter-district cooperation schemes in 2008. The EPA provided assistance to ensure that waste generated on remote islands and island counties would be transported to the main island of Taiwan for incineration.

In order to overcome bottlenecks in district refuse treatment and ensure a steady supply of waste for incineration plants through inter-district cooperation, the central government has developed a standard operating procedure for contracting inter-district cooperation on refuse treatment. The central government serves as a witness to the signing of agreements between local governments to ensure finalization of the contracts. Executive resources are thus shared and fully utilized to broaden the services of environmental protection facilities over a wider region of residents, resulting in a win-win situation in terms of energy and resources. Methods for providing assistance have been developed in the *Guidelines Concerning Subsidies for Inter-district Refuse Treatment Cooperation*.

As for the three counties – Nantou, Hualien and Hsinchu – that receive assistance for the incineration of refuse, each county government receives an EPA subsidy of NT\$180 per tonne of refuse. This subsidy goes toward carrying out the following tasks to achieve inter-district cooperation on refuse treatment:

1. Reducing or cancelling basic water, electricity, and health insurance fees for citizens directly affected by the inter-district cooperation on refuse treatment scheme
2. Training of citizens to participate in refuse inspection as it enters incineration plants

3. Compensating those who help inspect refuse as it enters incineration plants and providing rewards to those who discover materials that should not enter incineration plants

4. Planning and carrying out strategies to reduce refuse at the source

5. Planning and implementing refuse sorting; reuse and recycling of resources and food waste; and installation, operation and maintenance of necessary equipment and facilities

6. Planning and implementing collection of refuse treatment fees based on volume

7. Organizing and mobilizing environmental volunteers

8. Education and training of environmental volunteers

9. General waste clearance and treatment equipment including items for keeping the streets clean

10. Developing environmental industries and giving preferential treatment to residents directly affected by related activities

From 2005 to the end of 2012, the EPA implemented inter-district cooperation on refuse treatment including assistance with developing contracts, transfer of refuse to incineration plants and promotion of related environmental industries. This has led to the following concrete results:

1. In July 2005, the EPA actively coordinated with Hualien and Yilan counties on a mutually beneficial inter-district cooperation scheme – the nation's first finalized contract in inter-district cooperation on refuse treatment between two counties. This kicked off a 20-year long-term inter-district cooperation, and is regarded as a milestone for the administrative agreement mechanism. Since then, similar contracts have been successively put into effect between Taichung City and Nantou County, as well as Chiayi County and Nantou County.

2. From 2006 to 2012, the EPA helped solve problems resulting from the 152,000 tonnes of household refuse

that needed to be transferred from Nantou, Hualien, Hsinchu, Penghu, Kinmen and Lianjiang counties to nearby counties for treatment at incineration plants (refuse volumes shown in chart).

3. From 2006 to 2012, the EPA provided subsidies to ten jurisdictions – Yilan County, Hsinchu City, Miaoli County, Taichung City, Changhua County, Chiayi County, Chiayi City, Tainan City, Kaohsiung City and Pingtung County – to carry out 73 projects in the ten categories mentioned above. The two largest of these categories, accounting for 42.4% of all subsidization, were task: 5) Planning and implementing refuse sorting; reuse and recycling of resources and food waste; and installation, operation and maintenance of necessary equipment and facilities, and task 10) Developing environmental industries and giving preferential treatment to residents directly affected by related activities

Now that there is an annual increase in recycling rates and less pressure on refuse disposal and treatment systems, the focus of incineration plant operation and management has turned to reducing pollution emissions and raising energy efficiency. In the effort to fight global warming through energy conservation and carbon reduction, the EPA will continue to promote inter-district cooperation on refuse treatment while also focusing on ways to recover the heat generated from refuse incineration, as has become the practice of northern European nations using district heating and cooling systems. Further steps include integrating anaerobic digestion of organic wastes, and developing torrefaction and pyrolysis technology and equipment so as to gradually transform incineration plants into local bioenergy centers. These changes will ensure that waste can be utilized to its fullest potential as a resource – indeed this is the direction that next-generation waste treatment needs to take.

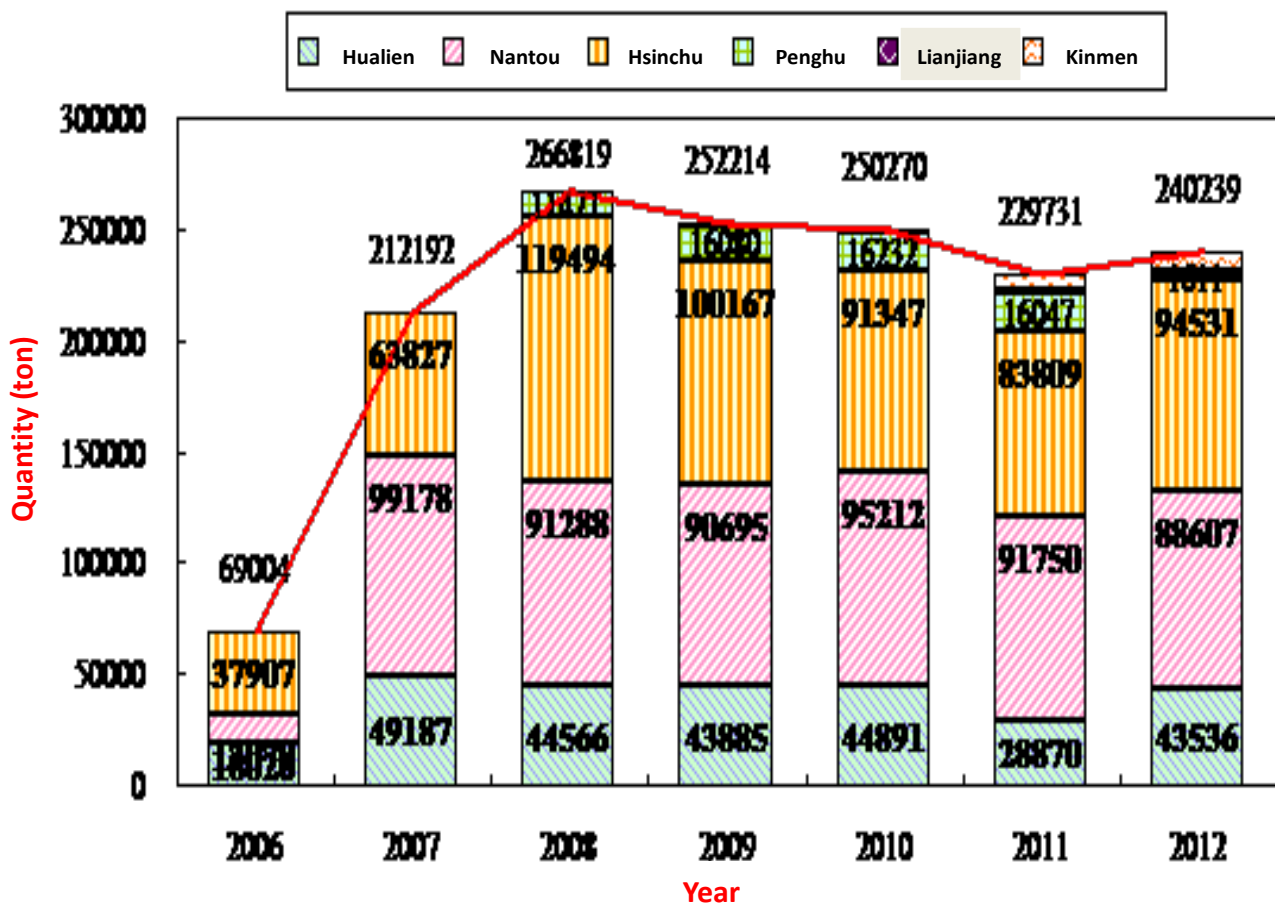


Figure: Volumes of refuse exported from six counties

International Cooperation

Taiwan and US Sign Three Technical Cooperation Agreements

On 16 July 2013, officials from the Taipei Economic and Cultural Representative Office in the United States as well as the American Institute in Taiwan formally signed three agreements at the AIT Washington Headquarters located in Arlington, Virginia. Signed were: the extension of the Taiwan-US Agreement on Technical Cooperation in Environmental Protection, the implementing agreement #10 for the environmental protection cooperative agreement, and the cooperation agreement in atmospheric monitoring, clean energy, and environmental science. The signing of these three agreements exemplifies how Taiwan-US cooperation on environmental protection and developing clean energy sources benefits both parties.

The three agreements were signed by Jacob Chang, Deputy Representative of the Taipei Economic and Cultural Representative Office in the US, and Barbara Schrage, the Managing Director of AIT. A group from the Taiwan EPA, led by Minister Stephen Shu-hung Shen, witnessed the signing. Also present were Jane Nishida, the US EPA's Acting Deputy Assistant Administrator for International & Tribal Affairs; senior consultant Mark Kasman; Dr. Phyllis Yoshida, Department of Energy (DOE) Deputy Assistant Secretary for Asia, Europe and the Americas in the Office of Policy and International Affairs; and Christopher Beede, Director of the Office of Taiwan

Coordination at the US Department of State.

The first bilateral environmental protection cooperation agreement between Taiwan and the US was signed in 1993. Over the last 20 years both sides have cooperated on over 190 tasks. The extension signed on this occasion will last until June 2018 and formally sets into motion the 10th Implementing Agreement for the Taiwan-US Environmental Protection Cooperative Agreement. This agreement will encompass promoting the remediation of polluted sites; adaptation to climate change; prevention, management, and recycling of



▶ Signing ceremony: from left to right are Dr. Phyllis Yoshida, DOE Deputy Assistant Secretary, Jacob Chang, Deputy Representative of the Taipei Economic and Cultural Representative Office in the US, Barbara Schrage, Managing Director of AIT, EPA Minister Stephen Shu-hung Shen, and Jane Nishida, US EPA Acting Deputy Assistant Administrator for International & Tribal Affairs

e-waste; maintaining air quality; raising sustainability; environmental law enforcement and compliance; and environmental education.

This is also the first time that the Taiwan EPA has signed a cooperation agreement with the US DOE. This will facilitate Taiwan gaining access to required technologies and policies developed by the DOE and its research units that are related to greenhouse gas reduction and building a low-carbon homeland. A number of cooperative projects are already on the drawing board.

The signing of the three cooperation agreements signifies a closer working partnership between the two nations in the field of environmental protection. The mutually-beneficial cooperation will continue to include personnel training, information exchange, symposiums, and official visits that will focus upon the fields of improving air quality, atmospheric monitoring, sustainable development, remediation of polluted sites, and clean energy.

Noise Control

Draft Preannounced: Noise Limits to Be Expanded to Cover Wind Turbines and Tightened

In order to foster a peaceful living environment, the EPA has announced revisions to the *Noise Control Standards*. The main amendments to the standards are stricter noise control standard values for construction projects, business premises, and facilities in noise control zones. Noise control standards for wind turbines have also been added, along with the relevant inspection and measurement parameters and other operational regulations.

As a result of the ever-increasing expectation of citizens for higher environmental quality, numbers of noise-related complaints have remained high in recent years, regularly ranking highest of all categories of public nuisance complaints. However, over 90% of complaints turn out to be cases in which the noise levels are within control limits or cannot be measured by the time the inspectors arrive. Only 8% of all noise complaints result in punitive action, indicating that noise control standards are still somewhat not in line with public perception of noise pollution. In addition, there has been a rapid rise in recent years of repeated complaints about recurring noise problems that are within control limits but are still annoying to the public. This category of complaint is the main reason why the overall annual number of noise complaints is still rising. To adequately address the above problems, it was deemed necessary to revise the noise control values and adjust the regulations to take into greater account the time of day and assessment methods used.

The main points of the revisions are as follows:

- There will be a 3-decibel decrease in maximum permitted low frequency volumes for factories,

- entertainment venues, retail or wholesale outlets, or construction sites in noise control zone categories 1-3.

- There will be a 3-decibel decrease in maximum permitted noise volumes of all frequencies for construction sites in noise control zone categories 1-3.

- There will be a 3-decibel decrease in maximum permitted noise volumes of all frequencies for factories, entertainment venues, and retail or wholesale outlets in noise control zone categories 2 and 3.

- There will be a 3-decibel decrease in maximum permitted noise volumes for loudspeakers in all noise control zone categories at all times with the exception of those in Category 1 zones during night time hours.

In order to address the problem of disputes over what locations are suitable for inspectors to choose when measuring noise pollution caused by wind turbines, the EPA has added an incremental measurement method to the regulations to restrict full frequency

noise levels from wind turbines and factories, along with the special standards for wind turbines. Amending the noise control values and adjusting the regulations to take time of day and assessment methods more into account should also help to reduce the number of noise complaints received.

The recent revisions to the noise control standards translate into a 3-decibel decrease in the maximum permitted volumes for noise sources, a large adjustment that will force affected enterprises to make improvements to noise sources and thus be less bothersome to neighboring residents. Special noise control standards applicable to wind turbines have

also been added in order to solve disputes over what locations are suitable for measuring turbine noise levels. By introducing differing standards depending on the time of day in different control zones, the EPA predicts that the percentage of inspections resulting in penalties being sanctioned will rise to over 15% and will result in a better living environment and a reduction in the number of repeat complaints. The EPA is continuing to urge all owners or operators of noise pollution sources to make an effort to maintain peace and quiet by conducting regular inspections of their facilities and carrying out improvements or maintenance whenever necessary so that their operations do not disturb neighboring residents.

Water Quality

24-Hour Online Effluent Monitoring of Large Enterprises

Starting from 15 July 2013, the EPA has begun a dual-stage implementation of continuous online monitoring of wastewater quality and volumes for large-scale water pollution sources. The enterprises being targeted are factories permitted to use industrial zone sewer systems for daily effluent discharge volumes of over 2,000 m³, enterprises with daily effluent discharge volumes of over 15,000 m³, and power stations where the effluent does not come into contact with cooling water or those that use seawater for flue gas desulfurization processes in their air pollution prevention facilities.

The first stage of the implementation of continuous online monitoring will affect industrial parks with a maximum permitted daily discharge volume of 10,000 m³ or industrial parks with wastewater drainage systems that have passed environmental impact assessments. Such industrial parks are required to install automatic wastewater quantity and quality testing and monitoring equipment that can transmit data online to their local environmental protection bureau by 14 July 2014.

The second stage of the implementation will affect enterprises with a maximum permitted daily discharge volume of 15,000 m³, power stations where the effluent does not come into contact with cooling water or those that use seawater for flue gas desulfurization processes in their air pollution prevention facilities, and industrial park wastewater drainage systems that have daily wastewater discharge volumes between 2,000-10,000 m³. These enterprises will have to install automatic testing and monitoring equipment by 31 December 2014. The required items that must be tested for at the discharge outlet are: volumes of wastewater, water temperature, pH, electrical conductivity, chemical oxygen demand,

and suspended solids. CCTV recording equipment must also be installed. The new regulations also state that automatic water volume measuring equipment must be installed at the inlets of industrial wastewater drainage systems and CCTV equipment at designated rainwater outlets in order to improve control over flows of wastewater in industrial parks.

EPA statistics show that at present there are 96 enterprises that have installed automatic online monitoring apparatuses, and when the remainder complete installation (before the end of December 2014) the environmental agencies will be able to keep a close watch in real time over 56.8% of industrial effluent discharge. This will allow them to raise the alarm immediately in the case of abnormal discharges so that emergency response measures can be activated and improvements made. The new regimen will thus have a positive impact upon the conservation of water environments. If these measures prove to be effective with large-scale enterprises, the EPA will consider implementing the same measures in stages for small and medium enterprise pollution sources in order to gain maximum control over discharges of industrial wastewater.



▶ Automatic monitoring system at the inlets and outlets of industrial wastewater drainage systems

Climate Change

Central and Kinmen Governments Commit to 3-2-0 Kinmen Low-carbon Island Plan

On 8 July 2013, the Kinmen Low-carbon Island Task Force – a group with EPA Deputy Minister Tzi-Chin Chang and Kinmen Magistrate Wo-Shi Lee as joint conveners – convened its first committee meeting in Kinmen County. The meeting showed the commitment of the central and local governments toward the Kinmen Low-carbon Island scheme that aims to turn Kinmen into a zero-carbon island by the year 2030.

The task force committee meeting was the first since the approval of the Development Plan of Kinmen Low-carbon Island by the Executive Yuan. Kinmen was chosen as the location for the meeting to signify the importance that the central government places on building low-carbon infrastructure and a sustainable green economy for the island. The task force is composed of senior personnel and bureau chiefs from central and Kinmen government departments. They are charged with supervising and coordinating the work, as well as evaluating and reporting on progress made. Some of the work will involve interdepartmental cooperation to integrate resources and thus make the carbon reduction efforts more effective.

The Kinmen low-carbon plan involves maintaining the unique features of the island while developing local government administration, as well as setting

targets for energy saving and carbon reduction. The EPA has already worked with the Kinmen County Government to complete overall assessments and planning for construction of the island's low-carbon infrastructure. The Building Kinmen Low-carbon Island Plan (for 2013-2018) has already been put forward, and involved setting a number of forward-looking and challenging "3-2-0 Low Carbon" targets: Reducing the annual average per capita CO₂ emissions for Kinmen residents from 3.79 tonnes in 2009 to 3 tonnes in 2014, to 2 tonnes by 2020, and to be carbon neutral (zero carbon) by the year 2030. The plan was approved by the Executive Yuan on 20 May 2013.

Putting the Kinmen low-carbon plan into action over the next six years will involve the central government, Kinmen County Government and the private sector providing a total expenditure of NT\$4.322 billion. This capital will be spent on areas such as manufacturing,

transport, buildings, and living environments, with the specific measures laid out in six primary flagship plans. Each phase will have concrete targets for energy savings and carbon reduction, and implementation of the plans will stimulate the development of local green industries, eco-tourism, and other related industries. The EPA estimates that the boost to the local economy will reach NT\$821 million annually, which means that the invested capital will be returned in 5.27 years. The total reduction in carbon is expected to reach 600,000 tonnes, and approximately 1,000 employment opportunities will be created.

A statistical survey done by the EPA reveals that in 2013 the central and Kinmen governments spent over NT\$431.5 million on Kinmen's low-carbon infrastructure. For plans approved for implementation in 2014, the central government has already allocated an estimated budget of NT\$216.42 million. EPA Deputy Minister Tzi-Chin Chang and Kinmen County Commissioner Wo-Shi Lee have also promised that the central and local government will work closely together to bring in low-carbon technologies and facilities that will facilitate the transformation of Kinmen into an intelligent low-carbon island. They are both completely confident that the 3-2-0 carbon reduction targets can be achieved.

The Kinmen County Government has been vigorously rolling out a pilot plan for the low-carbon island infrastructure over the last two years and took the rare opportunity provided by the committee meeting to show their central government counterparts the sustainable low-carbon measures that are already in place. These included transportation by electric buses and sightseeing with electric carts that gave the central government personnel a taste of the convenience and

eco-friendliness of green transport and low-carbon sightseeing. They were also able to observe clean up work in progress, environmental greening through planting, well-designed and eye-catching eco-friendly scenic spots, and low-carbon recreational bicycle paths. They were also impressed by the traditional Minnan style buildings that have been painstakingly restored – to preserve local cultural heritage and to help to rejuvenate small villages – some of which have been turned into B&Bs. The EPA is keen to point out that the B&B tourist industry is eligible to take part in the EPA's Green Action Plan that encourages visitors to bring their own toiletries when staying in green hotels, to avoid having sheets and towels changed if possible, and to rent electric scooters or electric-assisted bicycles during their stay in order to minimize their impact upon the environment.

The EPA emphasized that building the low-carbon infrastructure on Kinmen will take many years of persistent and progressive work, building on technological advances as they appear. Each of the planned measures will need the involvement and cooperation of government, corporations, and the general public. These three powerful forces – central and local government cooperation, green manufacturing and private sector capital investment and participation of citizen groups and individuals – will be applied to the goals of low-carbon energy applications, maximizing energy efficiency, and popularizing low-carbon economic activities. When supported by suitable education policies and promotion in order to change values and lifestyle habits they will enable saving energy and reducing carbon emissions to become an integral part of daily life on Kinmen, making the island a benchmark for Taiwan's low-carbon vision.

Solid Waste

Draft of Resource Reuse and Recycling Act Sent to Legislative Yuan for Review

After a careful study of the principles of sustainable materials management (SMM) and a recycling-based society, the government has decided to combine the *Waste Disposal Act* and the *Resource Recycling Act* into one piece of legislation – the *Resource Reuse and Recycling Act*. Following the 25 July 2013 session of the Executive Yuan, Premier Jiang Yi-huah announced that a draft of the act had been approved and was being sent to the Legislative Yuan for review.

The *Waste Disposal Act* has been in effect since 1974 and basically covers the end treatment of waste, with only limited concern for recycling and reuse. The *Resource Recycling Act* was promulgated in 2002 in order to strengthen Taiwan's recycling and reuse regimen, and although it is still being enforced its regulations are in need of updating. As having both of these acts written into law at the same time creates problems of legal concurrence it would be preferable for them to be combined. The EPA has been holding consultations and discussions on combining these two acts since 2004.

In order to put sustainable, cyclical use of resources, energy saving, and carbon reduction policies into practice – thus reducing the consumption of resources and the corresponding burden upon the environment – the *Resource Reuse and Recycling Act* incorporates the 5R principles:

- 1) Reduction: Reduction at source, such as reducing the amounts of raw materials that manufacturing operations consume, and also reduction of the waste created at the consumer end of a product's lifecycle
- 2) Reuse: Reusing resources whenever possible before disposing of them
- 3) Recycling: Seeing waste as a recyclable resource
- 4) Energy Recovery: Waste that cannot be recycled should be used as fuel whenever possible
- 5) Land Reclamation: Waste that cannot be recycled or reused using any of the above methods should be treated until it is stable and harmless and then used in land reclamation projects

Enshrining the 5R mechanisms into law will bring the ultimate goal of zero waste through total recycling closer to becoming a reality. The draft of the *Resource Reuse and Recycling Act* has a total of nine chapters and 116 articles, and in comparison to the current regulations has the following additional regulations:

1. The act gives the central competent authority the authority to determine what is defined as waste resources.
2. Waste resources should first continue to be used if possible; if not, then they should be reused, recycled,

or disposed of properly, in that order.

3. The central competent authority should consult with the central industry competent authority on policy formulation and program planning. For development plans for commercial port areas or coastal industrial parks, harmless, stable, non-inflammable waste resources must be reused in the construction of new infrastructure or for land reclamation and artificial islands wherever possible.
4. The central competent authority should consult with the central industry competent authority on formulating guidelines for eco-friendly design.
5. Procurement for government agencies, public schools, and state-run enterprises should give priority to eco-friendly products.
6. In order to expand the disposal responsibilities of responsible enterprises, in addition to the current fee paying mechanism they will henceforth be required to implement self-regulation.
7. Regulations have been added covering industrial waste disposal and joint liability for proper disposal.
8. Reuse management responsibilities that are currently divided among ministries will be integrated into a set of recovered resource management regulations to be formulated by the central competent authority.
9. The central competent authority has been authorized to designate and announce legal waste disposal operators and facilities, and to levy the industrial waste disposal and facility remediation fee that will go into the Industrial Waste Clearance and Disposal Fund.
10. Final waste disposal facilities that have ceased operations should continue operating pollution prevention equipment at the site and conduct regular monitoring.
11. For accidental violations of a minor nature, demerit points will be recorded and warnings issued; continuous violations will result in administrative penalties.
12. If illicit profits gained from violating the regulations exceed the maximum designated fines, then the fines

can be increased after due consideration of the scope in law.
of the profits, not limited by the maximums set down

Toxic Substance

Tighter Drinking Water Standards Considered

The EPA is taking steps to extend its environmental labeling system to the service industry. In addition to the amendments of the Green Mark specification standards announced for the "Hotel Industry" in August 2012, the EPA newly announced the environmental labeling standards for the travel service industry, restaurant industry, cleaning services industry, car rental industry, and car washing industry in May 2013.

In order to strengthen control over drinking water quality and facilitate improvements, the EPA has preannounced revisions to Article 3 of the *Drinking Water Quality Standards*. Standards have been added for nine toxic substances: haloacetic acids (HAAs), seven volatile organic compounds (VOCs), and aluminum. The standards for dioxins have also been tightened in the revision draft.

The EPA has been continually assessing possible health risks caused by unlisted substances in drinking water and has also expanded its examination of overseas water quality standards and regulations. Data from the WHO, the USA, Canada, Germany, the UK, Japan, and Australia have been referred to in making an overall assessment of the current situation in Taiwan, and for conducting evaluations of overseas water treatment techniques/testing

methods and the feasibility of using them in Taiwan. Based on the principles of risk prevention, the EPA has thus proposed to make nine additions to the control standards: HAAs (a by-product of disinfection); seven VOCs (dichloromethane, 1,2-dichlorobenzene, toluene, xylenes, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, tetrachloroethylene); and aluminum, which is known to affect potability and flavor. The standards for one of the most common POPs – dioxins – have also been revised. The main points of the revisions are as follows:

1) Control standards for HAAs are planned to be set at 0.080 mg/L and will take effect from 1 July 2014. After taking into account the optimization of disinfection parameters achievable through adjustments to water purification plant procedures, it was decided to raise the standard to 0.060 mg/L from 1 July 2015.

Draft of Revisions to Article 3 of the Drinking Water Quality Standards

Added and revised items	Maximum value	Enforcement date	Remark
Haloacetic acids	0.080 mg/L	1 July 2014	Newly Added
	0.060 mg/L	1 July 2015	
Dichloromethane	0.005 mg/L	1 July 2014	Newly Added
1,2-Dichlorobenzene	0.6 mg/L		
Toluene	1 mg/L		
Xylenes	10 mg/L		
cis-1,2-Dichloroethylene	0.07 mg/L		
trans-1,2-Dichloroethylene	0.1 mg/L		
Tetrachloroethylene	0.05 mg/L		
Aluminum	0.2 mg/L	1 July 2015	Newly Added
Dioxins	3 pg-WHO-TEQ/L	1 July 2014	Revised, current standard is 12 pg-WHO-TEQ/L

2) Control standards for seven VOCs have also been formulated. The control standard for dichloromethane are planned to be set at 0.005 mg/L; for 1,2-dichlorobenzene at 0.6 mg/L; for toluene at 1 mg/L; for xylenes at 10 mg/L; for cis-1,2-dichloroethylene at 0.07 mg/L; for trans-1,2-dichloroethylene at 0.1 mg/L; and for tetrachloroethylene at 0.005 mg/L. These standards are planned to take effect from 1 July 2014.

3) The newly-added control standard for aluminum is planned to be set at 0.2 mg/L. Since some drinking water providers have yet to complete the

necessary upgrades to their hardware and software, enforcement of the new standard is planned to take effect on 1 July 2015. Considering the demand on water supply and Taiwan's subtropical climate and hydrology, whenever turbidity exceeds 200 NTU during typhoons the aluminum control standards will not be applicable.

4) The current control standard for dioxins of 12 picograms WHO toxic equivalent per liter will be tightened to 3 picograms WHO toxic equivalent per liter, and are planned to be enforced from 1 July 2014.

Air Quality

Air Pollution Fees for Construction Projects Amended

The EPA has decided to make it more economically attractive for construction companies to improve air quality by adopting air pollution prevention measures. To this end, revisions to the *Air Pollution Control Fee Rates for Construction Projects* have been made and were announced on 5 July 2013.

Legislation states that air pollution control fees for construction projects are to be collected by local governments, and fees collected over the previous five years have been in the range of NT\$1.2 billion. The primary purpose of the revisions is to adjust the fee rates and fee basis for dredging projects, moving from the current system of stating fees in the project contract to one of calculating them according to the volumes of loose earth transported out of the site, which better reflects the actual social cost of pollution. Construction firms that adopt more effective air pollution prevention facilities can apply to the relevant competent authority for a lower fee rate.

In order to further improve air quality in Taiwan, on 14 May 2012 the EPA announced revisions to the *Air Quality Standards*. PM_{2.5} was added, and controls over air pollutants emitted by each category of enterprise were tightened as well. At present, central and southern Taiwan are still the regions where PM₁₀ levels exceed air quality standard maximums (in other words it is a Grade 3 region). A reason for this,

and the source of many complaints, is the fugitive particulate matters thrown up by riverside dredging operations (including gravel trucks transporting soil and gravel), which has a noticeable impact upon the quality of life of nearby residents. Air pollution control fees for dredging operations are also comparatively low at present, meaning that some local governments are not getting enough money from levying them to cover pollution management costs. The fee rates have thus been revised to make it more economically attractive for construction companies to reduce emissions of particulate pollutants, and thus improve air quality by adopting air pollution prevention measures.

The EPA reminds all construction company owners that the above revisions will come into effect on 1 January 2014. They should thus budget for the increase in air pollution control fees and submit all necessary forms and fees before starting new projects in order to avoid fines.

Soil & Groundwater

Minister Shen Inspects Remediation Site and Low-carbon Tourism in Hualien

Minister Stephen Shu-hung Shen made a trip to Hualien on 3 August to inspect the implementation of some green remediation projects and to learn about how the contaminated sites were being improved through the induction of green remediation projects. In addition, by visiting low-carbon shops and exchanging thoughts with locals, he was able to appreciate the development of green industry in Hualien.

Ever since the *Soil and Groundwater Pollution Remediation Act* was promulgated and implemented in 2000, the EPA has been active in discovering sites of mass contamination. In addition to pro-actively establishing the Technical Reference Guide to expedite the remediation of contaminated sites, the EPA has, in keeping with international trends, introduced the concept of green and sustainable remediation. In fact, the central government selected the Beipu Oil Terminal as the model site for promoting green and sustainability oriented remediation. In doing so, environmental footprints and the economic and social aspects of Beipu were all taken into consideration. The overall remediation thinking encompasses the benefits of pollution removal, energy saving and carbon reduction, hydraulic control and landscaping.

On the following day, Minister Shen paid a personal visit to Liyu Lake. In an attempt to understand how well Hualien County has been promoting green industry and low-carbon tourism, he toured low-carbon stores and talked to local residents. In addition, the EPA held a seminar and exchanged views with local elected representatives on the problems confronting the engineering and management policy of green, sustainability oriented remediation. Only when the EPA acquires a comprehensive understanding of local needs can we expect that in the future, soil and groundwater pollution remediation will stride forward based on local environmental quality, regional economic development, and social expectations.



▶ Minister Shen exchanging views with Hualien representatives

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