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## Feature Article

### Establishment of Taiwan's Toxic Chemical Accident Prevention and Relief System

Planning of toxic chemical accident prevention work in Taiwan began in 1995. Originally using telephone networks to provide emergency advisory services, the system has gradually evolved to dispatch specialists that can provide onsite technical support and advice on responding to and recovering from environmental accidents.

The EPA drafted the Toxic Chemical Accident Prevention and Relief Working Plan (毒性化學物質災害防救業務計畫) as directed under the Accident Prevention Basic Plan (災害防救基本計畫) to serve as the basis for each level of government to carry out toxic accident prevention work, emergency response measures, and environmental accident recovery and relief work.

The plan provides the basis for a comprehensive toxic chemical accident prevention and relief system that can assist the relevant agencies in handling all stages of prevention, preparation, accident reduction, emergency response and recovery work in a way that minimizes environmental impact. The system ensures effective organization of prevention and relief work, manpower, and equipment so as to control any

type of toxic chemical accident (leak, pollution, fire, or explosion) in as short a time as possible.

#### Toxic Accident Prevention and Emergency Response Capacity Gradually Enhanced

Promulgation of the Accident Prevention and Relief Act (災害防救法) in 2000 provided the basis for carrying out toxic accident prevention and relief work in Taiwan. To provide specialized emergency support during toxic accidents, the EPA established the toxic accident emergency response system and established three advisory centers in northern, central and southern Taiwan in 2001. In the event of a toxic accident these centers would dispatch specialists to support emergency response work and provide onsite technical advice.

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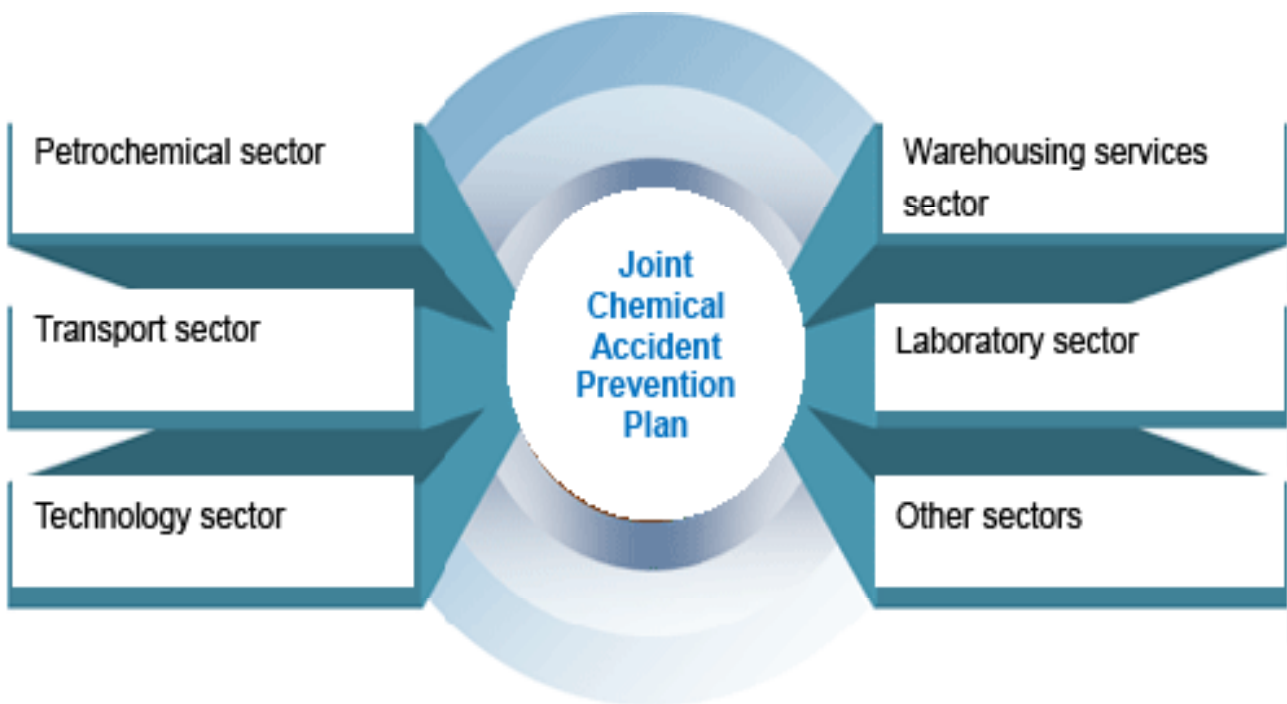
To make up for a shortage of emergency response equipment, specialists and monitoring equipment at accident sites, in 2006 the EPA set up seven environmental toxic accident emergency response teams at locations in northern, central and southern Taiwan, improving the government's capacity to provide professional emergency response. These seven centers are based in New Taipei City, Hsinchu, Yilan, Taichung, Yunlin, Tainan and Kaohsiung, and staffed with response teams on rotating duty 24 hours a day everyday of the year to provide onsite support and assist government relief agencies with environmental monitoring and emergency advice. The original three regional toxic accident advisory centers were merged into the Environmental Toxic Accident Consulting and Monitoring Center. This center provides all fields with advisory services on the management of toxic chemical substances (and chemical products) and emergency response measures, as well as monitors the handling of accidents nationwide.

**Strengthening Prevention and Self-Management by Industry to Reduce Risks**

The EPA deemed it necessary to strengthen industry's capacity in self-management and preparedness in order to ensure prevention of

accidents, environmental pollution and harm to human health. Drawing on the management methods of other advanced nations and taking into account the particular conditions of operations in Taiwan, in January 2007 the EPA revised the Toxic Chemical Substance Management Act and followed with revisions to related bylaws.

These revisions strengthened safety management of toxic chemical handling operations as well as emergency response capacity. The Toxic Chemical Substance Hazard Prevention and Emergency Response Plan Regulations (毒性化學物質危害預防及應變計畫作業辦法) were formulated, stipulating that handlers of Class I~III toxic chemicals must submit a Hazard Prevention and Emergency Response Plan to their local government. Such plans must include toxic chemical management and hazard prevention management measures, emergency response actions, equipment, training in use of equipment in accident prevention/relief, drills and educational initiatives. Additional revisions have strengthened regulations on safety management during the transport of toxic chemicals by requiring toxic chemical transport vehicles to install real-time tracking systems. To date, such equipment has been installed on over 1,600 vehicles operated by over 290 enterprises.



▶ Figure: Framework of the joint prevention plan

## Joint Prevention Groups Established Based on Type of Industry

Increasingly diversified demands for accident prevention and relief work by different fields of industry in recent years have prompted a shift in the prevention and relief system. The system evolved to not only strengthen accident advisory services, but also provide onsite support and emergency response, including toxic waste disposal and recovery from environmental accidents. From the perspectives of enterprise sustainable development, responsible care, and the polluter pays principle, there is an urgent need to strengthen the capacity of toxic chemical operation sites to handle emergency response independently as well as develop joint response capacity.

In order to strengthen emergency response and handling of toxic waste in the event of industrial accidents, more emphasis has been placed on building the capacities for self-reliance and mutual support among chemical operation sites. Measures include:

- providing proactive guidance
- creating the format for a nationwide joint prevention organization

- providing advisory services
- integrating domestic emergency response materials and professional resources
- establishing a nationwide toxic accident joint prevention platform
- providing related joint prevention organizational information
- matching organizing groups of toxic chemical operators
- establishing cross-regional support
- linking upstream and downstream toxic chemical joint prevention organizations

By the end of 2011, there were 83 joint prevention groups established with the participation of 642 operation sites.

Each level of environmental agency continues to monitor industries using surprise tests, drills, and onsite guidance to ensure they are properly conducting toxic chemical safety management and toxic accident prevention and relief work.

## Sustainable Development

### Taiwan's Environmental Performance Ranked 29th Among 132 Nations

The World Economic Forum announced the results of the worldwide ranking of the Environmental Performance Index, or EPI, in its latest forum held in January. Of the 132 nations ranked, Taiwan came in 29th, ahead of Canada (37th), South Korea (43rd), Australia (48th), the US (49th), Singapore (52nd) and China (116th).

In the 2012 EPI ranking results released by Yale University and Columbia University, Taiwan ranked 29th among 132 nations evaluated. Among a total of ten policy categories, which included 22 indicators, Taiwan came first in the categories concerning the impact of air quality on public health, the impact of water quality on public health, and forest conservation. Gaining top honors in these categories shows just how effective efforts to maintain air quality, manage water use, conserve forests, and ensure

universal access to water and sanitary facilities have been.

In other policy categories, Taiwan performed above a majority of other nations on several measures, such as: environmental health indicated by child mortality (ranked 30th); ecosystem effects of air pollution evaluated by SO<sub>2</sub> emissions (ranked 44th); ecosystem effects of water resources evaluated by the change of water quantity (ranked 59th); biodiversity and habitat

conservation (ranked 46th); and, fisheries (ranked 56th). Also of note is that although Taiwan ranked 44th on the ecosystem effects of air quality in terms of SO<sub>2</sub> emissions, there has been a 22% drop in emissions from 13.71 kg per capita in 2000 to 10.72 kg per capita in 2005. As the government reinforces its management of industrial and vehicular emissions and steps up the promotion of green vehicles, it is expected that SO<sub>2</sub> emissions will continue to decrease.

However, there were some indicators in the 2012 EPI in which Taiwan did not fare so well. These included per capita CO<sub>2</sub> emissions, which was considered to be too high, and electricity generation from renewable resources, which was judged to be too low. Although it is a big challenge for Taiwan to reduce carbon emissions due to a high population density and a

high degree of industrialization, encouraging results have been observed with the joint efforts between the government and citizens of the nation working to combat global warming and climate change. In 2008, Taiwan recorded its first year of negative growth in CO<sub>2</sub> emissions, a reduction of 4.1% compared to 2007. The 2009 statistics showed a further reduction for per capita carbon emission of 4.3% compared to 2008. Taiwan is committed to its policy of energy saving and carbon reduction, and expects accelerated progress in reducing CO<sub>2</sub> emissions in the future.

In the future, the EPA will be working closely with related agencies to facilitate interdepartmental efforts in the fields of environmental protection and sustainable development and to actively seek environmental improvements that will help realize the goal of sustainable development.

## Waste Management

### Industrial Waste Reuse Regulations Announced

The EPA is keen to promote the reuse of industrial waste while retaining a suitable degree of regulatory control over public and private waste clearance and treatment organizations, enterprises recycling regulated recyclables, and the environmental testing service industry. To this end, the Industrial Waste Reuse Management Regulations (事業廢棄物再利用管理辦法) were announced on 19 January 2012. Details of the regulations can be found on the EPA Web site at <http://w3.epa.gov.tw/epalaw/index.aspx>. (鋼鐵業燒結工場空污物排放標準).

Abiding by the provisions of Article 39 of the Waste Disposal Act, the EPA formulated the 21 articles of the Industrial Waste Reuse Management Regulations. The regulations in these 21 articles cover the following areas:

- Reuse methods
- The content of documents submitted with permit applications or applications for permit extensions
- Permit evaluation procedures
- The content of documents submitted with applications for permit changes, and procedures for canceling permits
- Items that must be included in contracts

- Disposal methods to be employed before reuse
- Schedules, recording, reporting, and monitoring of reuse operations via closed-circuit television

The regulations serve as both a legal framework for the reuse of industrial waste and a mechanism for keeping tight control over the risks associated with managing reuse operations.

In order to promote the reuse of resources, Article 3 of the regulations stipulates the methods for reusing waste that should be employed by industries under EPA jurisdiction. In addition to the management methods listed in the attachment, the enterprises can also adopt methods that abide by central industry competent authorities regulations or that have been approved by said authorities. All other reuse methods that do not fall into the above categories must abide

by the regulations and be approved by the EPA. channels will facilitate greater reuse of resources. The EPA believes that allowing for a variety of reuse

## Toxic Substance Management

### EPA Announces Schedule for Full Ban on Asbestos

In order to reduce the risk of public exposure to asbestos, on 2 February 2012 the EPA announced the schedule for a full ban on the use of asbestos. Details of the announcement can be found on the EPA Web site at <http://ivy5.epa.gov.tw/epalaw/index.aspx>.

The EPA pointed out that most uses of asbestos are banned in Taiwan, although there remain four uses for which it is still permitted. Given the carcinogenic nature of asbestos, the EPA has decided to implement, in phases, a total ban on these substances to eliminate any possibility of asbestos fibers entering the atmosphere and affecting human health. The schedule for the ban has been designed to give related industries a specific deadline to adapt to and to plan for the end of asbestos-related operations. The main points of the announcement are as follows:

- From 1 August 2012, the use of asbestos in the manufacture of extruded cement composite hollow

panels and construction sealants will be prohibited.

- From 1 February 2013, the manufacture of asbestos roof tiles will be prohibited.

- From 1 July 2018, the use of asbestos in the manufacture of brake linings will be prohibited.

The EPA emphasized that the banning of the use of asbestos in the manufacture of products will reduce the amount of asbestos used in Taiwan and hence reduce the risk of exposure for workers and the general public, both protecting public health and fostering environmental sustainability.

## Soil & Groundwater

### Public Hearings Necessary Before Setting Soil Pollution Site Remediation Targets

In 2010 the EPA announced revisions to Article 24 Paragraph 5 of the Soil and Groundwater Pollution Remediation Act (土壤及地下水污染整治法) to include the provision that competent authorities are obligated to hold public hearings before beginning remediation projects. The Guidelines for Public Hearings Concerning Remediation Targets of Soil and Groundwater Pollution Sites – were formulated. The guidelines were announced on 2 February 2012, and took effect immediately.

The Guidelines for Public Hearings Concerning Remediation Targets of Soil and Groundwater Pollution Sites accord with the constitutional rights of the public for full disclosure of information, and also abide by the principle of encouraging public participation in matters of public concern. The EPA stressed that for public hearings to be truly effective members of the public must take the opportunity to express their opinions. The guidelines also stipulate the format of public hearings, procedures to be

followed, and the ways that disorderly attendees can be dealt with in order to prevent special interest parties from disrupting the hearings. Also stipulated are follow-up corrective measures for completed administrative procedures. The guidelines have been designed to ensure that public hearings are conducted in an orderly fashion so that subsequent remediation plans can be approved at the earliest possible date.

According to Article 24 Paragraph 2 of the Soil and Groundwater Pollution Remediation Act, before competent authorities can sanction remediation targets that meet minimum control standards they must first join with other relevant agencies and hold a public hearing to which technical experts, academics, civic groups and local citizens should be invited. The purpose of such a hearing is to ensure that local residents are fully informed of upcoming remediation projects and have the opportunity to express their opinions, which will later be taken into account when

remediation plans are drawn up. The guidelines thus also state that written notifications for public hearings must include the items on the agenda, the parties that must be invited, and the requirement that information disclosed at the hearings must be published on the Web site of the competent authority. The written notifications must also detail meeting particulars such as the time and venue of the hearing, the layout of the meeting hall, the agenda, and keeping of the minutes. The above requirements are to protect the public's right of full access to information.

## Recycling

### Waste Glass Container Recycling, Clearance and Treatment Subsidy Rates to be Differentiated

The EPA has pre-announced revisions to the subsidy rates for the recycling, clearance and treatment of glass containers. The revisions have been designed to make the subsidy rates more reasonable and to add stability to the EPA's Resource Recycling Fund, while also increasing the reuse of glass containers.

The subsidy rate revisions are in response to the sizeable fluctuations in recent years in the international prices of raw materials, and are intended to encourage recyclers to separate glass containers according to color. The draft revisions to the subsidy rates for the recycling, clearance and treatment of glass containers will facilitate a thorough review of the costs deriving from the clearance and treatment of recyclable waste container materials and the value of the market for renewable resources. They will also facilitate an audit of certification costs and the financial standing of the Resource Recycling

Fund. The revisions are also intended to encourage recyclers to separate glass containers according to color. There are now different subsidy rates for monochrome and polychrome glass containers, which should lead to more effective reuse of these materials.

The EPA is keen to hear the opinions of all stakeholders and to this end will be holding public hearings according to the regulations. Details of the new subsidy rates can be found on the EPA resource recycling Web site: <http://recycle.epa.gov.tw>.

## Waste Management

### New Recycling, Clearance and Treatment Fee Rates for Containers Slated to Take Effect on 1 July

The EPA recently pre-announced draft revisions to the fee rates for the recycling, clearance and treatment of containers in response to dramatic fluctuations in the price of raw materials and also to promote the production of containers with more eco-friendly designs. The new rates are slated to come into effect on 1 July 2012.

The draft of the revisions concerns adjustment to the fee rates due to the need for an overall review of costs deriving from the recycling, clearance and treatment of recyclable waste container materials, auditing costs, the value of the market for renewable

resources, the environmental impact of the containers, and the financial standing of the Resource Recycling Fund.

In order to accelerate the trend toward eco-friendly



designs for container products, the drafted revisions provide for a low fee rate for PET containers from which the label can be easily removed, either because the label is made from shrink film with an easy-tear line or because the label is not self-adhesive but is stuck on with an eco-friendly adhesive. Offering economic incentives such as these is one of the many measures that the EPA adopts to protect the environment. In addition, operation mechanisms for the recycling, treatment and disposal of bioplastics

have also been included within the scope of the Resource Recycling Fund's management, and were therefore added onto the revision of material fee rates.

Details of the new subsidy rates can be found on the EPA resource recycling Web site <http://ivy5.epa.gov.tw/epalaw/index.aspx> in the section titled Pre-announcements of Drafts to Statutory Orders.

## Air Quality

# Electric Scooter Battery Swapping System Subsidy Revisions Pre-Announced

The EPA has been offering subsidies to encourage operators to take part in setting up the Electric Scooter Battery Swapping System, and will continue to promote the use of this scheme. To this end, the EPA has pre-announced changes to the regulations that will cut subsidies for five years for manufacturers who established battery swapping stations using EPA subsidies and have already recovered the costs incurred in establishing their stations. The EPA will use the money saved to subsidize the establishment of swapping stations in other districts, or related secondary systems, in order to accelerate the expansion of the battery swapping system.

The EPA first promulgated the Electric Scooter Battery Swapping System Subsidy Regulations on 14 June 2011. To date, one operator – in Banqiao district, New Taipei City – has won approval to establish Taiwan's first Electric Scooter Battery Swapping System, with a network of 30 stations. Electric scooter owners in Banqiao will thus be able to quickly swap batteries at any of the stations, relieving them of concerns about spent batteries or battery maintenance. Implementation of the system will greatly improve both the convenience and range of electric scooters.

In order to facilitate the continued expansion of the Electric Scooter Battery Swapping System and greater public participation in the scheme, the establishment of a widespread network of battery swapping stations is paramount. So that EPA subsidies can be put to good use in other districts or made available to subsidize the growth of secondary systems of stations, and also to stipulate the maximum charges permissible for swapping batteries, the EPA will be amending some of the articles in the above regulations as follows:

1. Types and quantities of secondary swapping stations that receive subsidies and that will not be restricted by these regulations will be specified.
2. The phrase "main system" has been added.
3. Subsidies for parallel chip testing will be stipulated, along with maximum subsidy amounts and subsidy payment methods.
4. The revisions will stipulate that operators whose swapping stations have already recovered the initial cost of establishing the station be required to repay the subsidy within five years.
5. The revisions will stipulate that the formula for calculating battery swapping prices must be approved by the central competent authority.

Details of the new subsidy rates can be found on the EPA's Web site: <http://www.epa.gov.tw>.

## Air Quality

## Draft of New Motorcycle and Scooter Emission Standards Pre-Announced

Improving air quality by tightening motorbike emission standards not only aligns Taiwan with international trends, but also encourages manufacturers to develop or adopt from overseas the latest pollution prevention technology that can be applied in the manufacture of clean vehicles.

The latest revisions to the draft of the Vehicular Air Pollutant Emission Standards affect Articles 6 and 7. The main revisions include:

- 1 January 2015, 1 January 2018, and 1 January 2021, respectively, are stipulated as the dates when sixth, seventh, and eighth stage emission standards will come into effect.
- The UN's Worldwide Motorcycle Emissions Test Cycle driving patterns for testing emissions will be adopted and the distance for endurance tests will be extended, starting from 1 January 2015.
- Fixed ratios of numbers of engine families that accord with idle testing emission standards of CO

=0%, HC=0 ppm have been added, along with hydrocarbon emission standards for motorbike crankcases, fuel tanks, and fuel delivery systems.

- Starting from 1 January 2018 motorbikes will have to be equipped with on-board diagnostic systems.
- Starting from 1 January 2021 control values for testing for non-methane hydrocarbons and particulate matter will be added.

The draft revisions to Article 6 and Article 7 of the Vehicular Air Pollutant Emission Standards have been published on the EPA Web site <http://w3.epa.gov.tw/epalaw> in the Pre-Announced Drafts of Regulations section (法規命令草案預告區).

## Environmental Education

## National Environmental Education Awards Guidelines Announced

In accordance with Article 21 Paragraph 2 of the Environmental Education Act, the EPA recently formulated and announced the National Environmental Education Awards Guidelines for the purpose of boosting the promotion of environmental education among citizens.

The National Environmental Education Awards Guidelines provide for the awarding of six categories of entities: private enterprises, schools, government departments (including agencies, public enterprises, and legal entities that receive over 50% of their funding from the government), non-governmental organizations (NGOs), communities, and individuals. It is hoped that the increase in the categories of entities eligible for the awards will encourage greater participation from the private sector and government agencies in promoting environmental education.

In order to implement the promotion of environmental education at the local level, the guidelines stipulate

that local governments conduct a preliminary review and hold their own award ceremony for deserving candidates from their administrative areas, and then submit the details of the most outstanding candidate in each of the six categories to the EPA. The EPA will then conduct evaluations before choosing national winners in each of the six categories. For the winners in the categories of NGOs, communities, and individuals a trophy and a cash prize will be awarded; for winners in the other three categories only a trophy will be presented. The EPA will also select 5 other worthy candidates in each category – a total of 30 altogether – who will also be presented with awards. Again, for the winners in the categories of NGOs



groups, communities, and individuals a trophy and a cash prize will be awarded; for winners in the other three categories only a trophy will be presented.

Details of the Guidelines will be put up on EPA

bulletin boards and will be published in the Executive Yuan Gazette. Details will also be made available for viewing on the EPA's Web site: <http://www.epa.gov.tw>

## Environmental Inspection

# Energy Conservation and Carbon Reduction Criteria Strengthen Inspection of Construction Quality

In 2011, the EPA's Construction Inspection Team added a new audit category, requiring construction projects to fulfill criteria in energy conservation and carbon reduction. In 2012, such practices will become one of the main categories for which environmental facility construction projects are inspected and evaluated.

The EPA's Construction Inspection Team was set up in 2002 to assist local governments in enforcing quality control standards for environmental facility construction projects. The team inspects construction sites and enforces a three-tiered quality control system for agencies in charge, construction supervisors, and contractors.

In 2011, 55 environmental facility construction projects were inspected, of which 20% attained a score of over 80 out of a 100-point scale. The remaining 80% scored 70~80. Point deductions for defects were also calculated in accordance with the Penalties for Defects Found During Inspections of Construction Projects. The total number of points deducted for construction supervisors was 2,431, and for contractors the total was 2,084. Fines amounting to NT\$1.5 million and NT\$5 million, respectively, were levied. In 2009, the EPA formulated the Protocols Governing Issuance of Rewards or Penalties Following Construction Quality Inspections that provide for rewards or penalties – dependent on quality inspection results – to be given to personnel working on construction projects. To date, the Construction Inspection Team has recommended rewards be given to 21 local government personnel. The team has also requested the removal of two quality control personnel and two construction supervisors from construction projects. Personnel from agencies in charge have also been fined on two occasions.

Although the proportion of environmental facility construction projects and their cost is small compared to the total number of public work projects nationwide, the EPA is steadfast in demanding that they be of the

highest quality and put increasing focus on energy conservation and carbon reduction practices. The EPA's Construction Inspection Team was the first government agency in Taiwan to gain ISO 9001 quality control accreditation and has its certification audited by an external agency every year in order to guarantee that its inspections of construction projects are of unflinching quality. The team's performance in 2010 was ranked third best of any government agency by the Public Construction Commission and in 2011 the team won a special quality inspection performance award, one of the awards in the 11th Public Works Performance Awards. The EPA is proud that its conscientious and unflinching performance in inspecting construction projects has been recognized at the highest level nationally.

Starting from 2012, ten specific energy conservation and carbon emission reductions practices are added to the environmental facility construction projects inspection checklist. These practices are:

- Employing ecological construction methods to protect the immediate environment
- Using green building materials or products with the Green Mark
- Reducing the use of building materials and saving energy whenever possible
- Spraying water around sites to prevent dust pollution
- Separating refuse to facilitate resource recycling

- Treating wastewater to protect surrounding bodies of water

- Sweeping and washing surrounding streets

- Preserving existing trees and/or planting saplings

- Reusing and waste reduction

- Conserving resources and using renewable resources whenever possible

The EPA hopes that enforcing energy conservation and carbon reduction practices for environmental facility construction projects will also act as a model for other construction projects.

## Eco-community

# International Exchange Speeds Promotion of Low Carbon Sustainable Homeland

The EPA recently held an international symposium on the theme of building a low carbon sustainable homeland, during which international experts shared their experiences in formulating sustainability plans and implementing low carbon measures. The EPA will be drawing on the successes of other nations in this field in the formulation of its long-term Low Carbon Sustainable Homeland Plan.

The EPA held the "International Symposium on Techniques and Economic Incentive Strategies to Move from Low-Carbon Communities to a Low-Carbon Sustainable Homeland." The symposium was held over one and a half days from 10~11 January 2012. Six delegates from the US, UK, Germany and Sweden – government officials, experts, and academics with extensive experience in urban planning, urban construction and developing low-carbon sustainable communities – attended the symposium and spoke on the topics of sustainability planning and low-carbon measures. The EPA hopes to draw on the successes of other nations in this field in the formulation of its long-term Low Carbon Sustainable Homeland Plan.

The symposium opened with an explanation of the structure of Taiwan's Low Carbon Sustainable Homeland Plan. This was followed by presentations from foreign delegates, who outlined their experiences in helping their respective governments to plan and construct low carbon, sustainable urban developments. The presentations included:

- Woking's (UK) Success in Helping Existing Communities Go Low Carbon

- Beddington's (UK) Zero Carbon Community Plan

- Hamburg's (Germany) Experience in Implementing Responses to Climate Change

- Malmo's (Sweden) Sustainable City Development Model

- San Francisco's (US) System of Making Energy Saving Improvements to Existing Buildings

- New Jersey's (US) Sustainable Community Plan

A fruitful exchange of ideas and experiences between the local and foreign delegates followed the presentations.

The EPA's primary objective for holding the symposium was to give local parties involved in the Low Carbon Sustainable Homeland Plan - government officials of all levels, and representatives from industry, academia and civic groups – the opportunity to hear from foreign experts in the fields of energy conservation, low carbon, and sustainable development and gain an understanding of their long-term planning techniques and strategies adopted to overcome obstacles. The discussions focused mainly on how central government policy affects planning and implementation of low carbon/sustainability projects; implementation strategies adopted at the local government level; financial planning; evaluation

and accreditation mechanisms; award and subsidy schemes; the development and application of low carbon methods; and the effectiveness of economic incentives.

The 2009 National Energy Conference specifically set out a timetable for the establishment of Taiwan as a low carbon homeland, and the EPA immediately began formulating plans for what is now known as the Low Carbon Community Project. After a nationwide assessment of suitable locations, 52 communities have been selected to become low carbon models. Directives set forth by President Ma Ying-jeou have encouraged the participation of counties and cities from which a suitable city will be chosen for developing an outstanding model. Fair mechanisms were adopted for holding this competition to choose a model low carbon city, and county magistrates and city mayors came forth to lead their respective teams to participate in the competition. County and city governments have been drawing on related resources to provide comprehensive low carbon planning and visions, and have come up with innovative, feasible administrative measures and practices that have the potential to reduce carbon emissions. In August 2011, four model low carbon cities were selected from Taiwan's four regions: New Taipei City in the north, Taichung City in the center, Tainan City in the south and Yilan County in the east. These regions, along with additional low carbon island initiatives in Penghu and Kinmen, are leading the way in establishing a nationwide foundation for a low carbon homeland.

There is an internationally growing trend towards urban development that is energy saving, low carbon, ecosystem-preserving, and sustainable. Although development policies, specific targets, functions, and measures may differ from nation to nation, the general focus is still on reducing waste, saving energy, recycling, and living in harmony with the environment. Only when development truly incorporates sustainability can sustainable urban development be a viable goal. Thus, low carbon urban construction must be based upon sustainability and focus not only on one or two measures, otherwise the result could easily be an increase in overall carbon emissions. Low carbon and sustainable development are now becoming the goals pursued by cities around the world and are the core of marketing of cities.

The EPA considers low carbon urban development to be a cornerstone of future designs for a truly

sustainable society and is thus working hard to get the Low Carbon Sustainable Homeland Project up and running. In addition, the seven specific carbon-reduction approaches that the EPA previously touted – green ecologies, energy-saving buildings, energy-saving facilities, renewable resources, green transportation, resource recycling and low carbon lifestyles – have now been incorporated into a list of ten major operational functions, with the addition of the following three functions: disaster prevention relief and adaptation; legal and financial tools; and social behavior and evaluation tools.

As central and local governments prepare to allocate personnel to work on the Low Carbon Sustainable Homeland Project, the EPA has taken a head start by integrating the manpower and resources of the departments involved. The EPA has also been supervising local governments as they assist township officials under their jurisdiction in setting up local offices to promote the Low Carbon Sustainable Homeland Project. In addition, the EPA is assisting municipal authorities in each of Taiwan's living perimeters to join forces in setting up inter-municipal organizations to promote the project. Meanwhile, the municipal governments are organizing regional conferences to which recognized experts from government, industry, academia, and research institutes will be invited for the purpose of establishing technical and consultative teams. In the future, the full spectrum of central and local government operations will be employed to establish an integrated platform that will allow for better interdepartmental communication, greater working cooperation, fuller exchanges of knowledge and methodology, and more effective usage of existing resources. Strengthening regional integration and liaison capabilities in this way will bind central, regional, and local administrative units closer together.

Holding the international symposium gave local experts the chance to hear of the experiences and opinions of their foreign counterparts concerning the successful implementation of low carbon, sustainable development projects. More importantly, the symposium presented an opportunity for local experts from industry, academia, government, and research institutes to discuss topics such as organization, spatial categories, technical specialization, law/regulations, and administrative systems in order to reach consensus and seek solutions to obstacles. The experience and knowledge of local experts will

be invaluable for raising developmental capabilities for the 52 low carbon sustainable model communities and the 6 low carbon model cities. They will also be able to assist Taiwan's 22 city and county

governments in replicating the model community/ model city experience in 369 townships and 7,835 villages in the future.

## News Briefs

### VOC Emission Calculation for Lithography Inks Revised

In order that the volatile organic compound (VOC) emission factor for lithographic printing processes more accurately reflect actual VOC emission volumes, on 9 January 2012 the EPA announced revisions to the Regulations Governing VOC Emission Factors for Manufacturing Processes, Operation Unit (Including Original Components) Emission Factors, Control Efficiency, and Other Quantitative Calculations, for Reporting and Paying Air Pollution Control Fees for Stationary Sources in Public and Private Premises (公私場所固定污染源申報空氣污染防制費之揮發性有機物之行業製程排放係數、操作單元(含設備元件)排放係數、控制效率及其他計量規定). The revision was made to the second item of the regulations, namely the tables attached containing notes on manufacturing emission factors for the printing industry and other listed manufacturing processes. The revision, which immediately took effect, adds a new method of calculating VOC emissions for inks used in lithographic printing processes.

The calculation of the VOC emission factor for lithographic printing processes includes all of the raw materials that contain VOCs and is done using the mass balance method. However, given that VOC residue from printed products remains on lithographic presses, it was decided to adjust the calculation by adding a calculation for VOCs in the ink and including a parameter for the product residue factor. The EPA estimates that following

the revision, approximately 205 lithographic printing companies used the new method in January 2012 when reporting calculations for their air pollution control fees for the last quarter of 2011.

### Emitters of Stationary Sources of Air Pollution that Require Permits Announced

The EPA recently announced the First to Eighth Groups of Stationary Sources of Air Pollution in Public or Private Premises Requiring Permits for Establishment, Adjustments or Operations (第一批至第八批公私場所應申請設置、變更及操作許可之固定污染源). Central to the new regulation is the revision concerning 17 types of industries using 19 types of manufacturing processes that were originally given pollution standards classifications according to the size of their registered capital, but that will now be classified according to factory floor area and combined horsepower and electro-thermal threshold of their equipment. The new regime is designed to prevent enterprises from reducing their registered capital in order to avoid permit restrictions. Also laid out in the regulations are threshold pollution levels based on types and volumes of product for manufacturers of surfactants, detergents, and laundry powder. This will exempt smaller manufacturing operations from permit requirements and thus make the permit regime more reasonable.

Details of the announcement was also be made available for viewing on the EPA's Web site: <http://www.epa.gov.tw/環保法規>.

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