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Feature Article

Minister Shen Participates in APEC Environment Ministers' Meeting

This year's APEC Meeting of Ministers Responsible for the Environment took place in Khabarovsk, Russia, from 16-18 July 2012. Taiwan was represented by EPA Minister Stephen Shu-hung Shen, who spoke to the meeting about the results of Taiwan's hard work in conserving natural resources, using said resources, transboundary air pollution monitoring, greenhouse gas reduction, and the green economy. Taiwan's delegates also held formal bilateral talks with their counterparts from Brunei, Hong Kong, Indonesia, the Republic of Korea, Malaysia, and the United States.

The meeting ended with the adoption of the *Khabarovsk Statement*, which is the first major document in 15 years of APEC meetings with environmental protection as its core theme. During the discussions, the Taiwan delegation suggested that each APEC member should draw up projects and schemes to facilitate the rescue of captured or displaced wild animals and their return to their original habitat. Taiwan's delegation also offered suggestions on the following topics that were included in the *Khabarovsk Statement*:

- Risk management of ecological systems at polluted sites.
- Knowledge exchanges to facilitate the strengthening of regional biodiversity.
- The reuse of recycled mineral resources.
- Increased controls of transboundary air pollution.

As Minister Shen explained during the meeting, Taiwan has an abundance of biodiversity. In order to

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protect the unique habitats and special species found only on Taiwan, there are now four acts and ten specific regulations governing forests, wild animals, national parks, and cultural heritage. A total of 89 different locations accounting for approximately 20% of Taiwan's land area are now conservation areas of some type. Minister Shen also stressed that Taiwan now has a comprehensive air pollutant monitoring network, including a super monitoring station on Mt. Lulin that is able to monitor levels of transboundary pollutants. Taiwan is thus able to actively participate in international air pollutant monitoring programs and recently promulgated regulations to cover PM_{2.5}.

Minister Shen called on APEC member states to improve mutual exchanges of transboundary air pollutant monitoring data, emissions reduction techniques, and transmission models. He suggested collaborative projects and schemes to increase the rescue of captured or displaced wild animals and their return to their original habitat. He also reiterated APEC's stance on promoting low-carbon economies and explained that Taiwan is currently promoting its Low-carbon Sustainable Homeland as a part of a series of measures designed to save energy, reduce carbon emissions, and stimulate the growth of the green economy. Minister Shen mentioned that Taiwan is also implementing urban mining by recycling valuable metals from waste electrical and electronic products.

During an interview that he gave to Russia's largest TV station - Russia 24 - Minister Shen mentioned that Taiwan will, by next year at the soonest, establish the new Ministry of Environment and Natural Resources, which integrates the government departments responsible for pollution control, ecological conservation, forest and water resource management, and meteorology. This will give the ministry the ability to solve complex environmental problems while maintaining perspectives on both the environment and natural resources. When the Russian TV reporter asked Minister Shen if he could share some of Taiwan's experiences in environmental protection with Russian viewers, Minister Shen explained how Taiwan in recent years has been emphasizing environmental education and law enforcement. He said that it is through environmental education that the public learns about the importance of environmental protection and gains the impetus to work with government departments to protect the environment.

Minister Shen also pointed out that Taiwan strictly enforces environmental regulations, and that illicit gains of manufacturers who violate regulations can be legally confiscated by the government. This has led to a greater respect for the law in Taiwan's industries.

Minister Shen had the opportunity to meet personally with all of the other delegate team leaders during the ministers' meeting, and described what Taiwan has been doing over the previous two years to promote regional environmental partnership plans. Minister Shen encouraged all APEC members to participate in existing collaborative projects concerning soil pollution remediation, the management and recycling of e-waste, and environmental data management. He also invited each APEC member to send delegations to some of the international conferences that will be held in Taipei this fall, including the Regional Environmental Data Work Team Meeting, from 10-12 September; the 12th APEC Roundtable Meeting on the Involvement of the Business/Private Sector in the Sustainability of the Marine Environment, from 17-19 September; and the International Symposium on E-Waste Resource Recycling, from 15-19 October.

The Russian hosts arranged a meeting for each nation's environmental experts to go over the ministers' statement, which, because of the wide scope of the topics to be discussed, ended up finishing deep into the evening at 1:30 am on 17 July 2012. The draft of the *Khabarovsk Statement* was thus finalized only hours before the official ministers' meeting on 18 July. At the experts' meeting, Taiwan's delegation offered suggestions on some topics that were included in the written content of the *Khabarovsk Statement*, including projects and schemes outside of conservation areas to increase the rescue of captured or displaced wild animals and their return to their original habitat; risk management of ecological systems at polluted sites; knowledge exchanges to facilitate the task of strengthening regional biodiversity; the reuse of recycled mineral resources; and increased controls of transboundary air pollution.

The draft of the *Khabarovsk Statement* from the APEC environmental ministers was formally passed during the ministers' meeting. The statement expresses a variety of views on the following five areas: conservation of biological diversity and natural world heritage sites, including nature conservation areas,

sustainable use of natural resources, sustainable water management and transboundary watercourses, transboundary air pollution and climate change mitigation and adaptation measures, and support for green growth. The ministers also agreed that the environmental situation has not significantly improved over the last decades despite the efforts of individual nations. The ministers stressed that further efforts are

needed to conserve nature, sustainably use natural resources and protect the environment, as one of the pillars for sustainable development. The meeting highlighted the complexity of sustainable development issues and the interdisciplinary cooperation through every stratum of government in the APEC member states required to deal with such complexity.



▶ EPA Minister Shen (front row right) spoke to the APEC Meeting about the results of Taiwan's hard work

Sustainable Development

Taiwan Representatives Make Voices Heard at Rio+20 Side Activities

The Rio+20 United Nations Conference on Sustainable Development lasted for three days and was attended by over 40,000 representatives. The main themes of the conference were the green economy and building an institutional framework for sustainable development. EPA Deputy Minister Dr. Shin-Cheng Yeh attended the on-site side event titled "Forests, Livelihoods and Green Economy," the first time that a high level official of Taiwan's top environmental agency has been able to officially attend this type of side event in the sustainable development conference hall.

The UN Conference on Sustainable Development (UNCSD) was held in the Brazilian city of Rio de Janeiro from 20-22 June 2012. It was the third in a series of major conferences – following the Earth

Summit in Rio in 1992 and the World Summit on Sustainable Development in 2002 in Johannesburg – that has seen national leaders from around the globe gathered in one hall to discuss and review the problems and prospects surrounding sustainable development. Twenty years have passed since the holding of the Earth Summit in 1992, thus this year's UNCSA is also known as Rio+20.

The summit saw representatives from 193 nations, including 100 national leaders and senior policy makers, engage in in-depth discussions on the two main topics of “Green economy in the context of sustainable development and poverty eradication” and “Institutional framework for sustainable development.” The final declaration – “The Future We Want” – was passed at the closing ceremony. The impressive figure of over 40,000 participants was due to the large number of people from international organizations, NGOs, and citizen groups holding events during the conference.

Deputy Minister: Strengthen Dialogue between Government and People and Put International Experience into Practice

Sustainable development encompasses a wide range of fields. But whether it is developing response and adaptation capabilities for climate change or building a resilient, robust society based on a green economy, the role of governmental departments is of paramount importance. Taiwan is no exception, and so personnel from each department of the Executive Yuan's National Council for Sustainable Development (NCSA), under the leadership of EPA Deputy Minister Yeh, attended Rio+20 to learn as much as possible.

Reflecting on the two main themes of the summit – the green economy, and the institutional framework for sustainable development – Deputy Minister Yeh pointed out that many citizen groups were in attendance and he expressed the hope that Taiwan's related policies will move toward enhancing networking between government departments and citizens' groups. He believes that working from the bottom up and adopting a multifaceted approach to public dialogue is the best way to put into practice the new approaches seen at international gatherings.

The participation of the Executive Yuan's team at Rio+20 was coordinated by using the NCSA as a

platform. The team's members came from the Ministry of Foreign Affairs, the EPA, the Ministry of Economic Affairs' Industrial Development Bureau, the Ministry of the Interior's Construction and Planning Agency and Taijiang National Park Authority, the Council of Agriculture's Forestry Bureau and Fisheries Agency, and the Council for Economic Planning and Development, among others.

Although it was originally hoped that more resources and funds would be made available, the delegation had to accept that even the government has limits to the resources at its disposal. Deputy Minister Yeh, however, was confident that by maximizing the effect of available resources, the delegation could still get things done. Strengthening ties with the private sector was one of those things. A case in point was the significance of the EPA's participation in a recent side event held by the Environmental Quality Protection Foundation on 16 June 2012.

At a post-Rio+20 symposium held from 22-23 July 2012, experts from various fields and other delegates put forward suggestions concerning the green economy and the institutional framework. Deputy Minister Yeh stressed that the results of the dialogues will be discussed at meetings of the NCSA and will be pursued within the framework of the council. He also expressed the hope that the NCSA's decision-making process will encompass more dialogue and a higher degree of reliance on the on-the-ground observations of citizen groups and local governments.

Nicaragua Supports Taiwan to Join International Environmental Organizations

Taiwan was given a rare opportunity to host a side event at the Rio+20 summit, and EPA Deputy Minister Yeh and Forestry Bureau Deputy Director General Hung-Chih Yang were able to attend the session titled "Forests, Livelihoods and Green Economy" in the hall of the World Summit on Sustainable Development. This marked the first time that a high official of Taiwan's top environmental agency was able to officially attend such an event. On this occasion, Minister - Private Secretary for the implementation of national policies of the President of the Republic of Nicaragua, Dr. Paul Oquist Kelley, stated his support for Taiwan's entry into international environmental organizations, so that Taiwan can make greater contributions to sustainable development.

The application to host the side event was filed by the Environmental Quality Protection Foundation, and the event was hosted by the foundation's chairman Ying-Shih Hsieh. Also in attendance were Deputy Minister Yeh, Deputy Director General Yang, Deputy Secretary General of the Red Cross Society of the ROC Hsiu-Fen Lin, Honduran Sub-Secretary Marco Jonathan Lainez Ordonez, Nicaraguan Minister Dr. Paul Oquist Kelley, Maria Fernanda of the Getulio Vargas Foundation in Rio de Janeiro, and Hector Velasco-Perroni of the Centre for International Sustainable Development Law. The side event was held on June 16, and the main discussions focused on forest management in the context of climate change and sustainable development.

As Deputy Director General Yang pointed out, "Experience shows that if forest management and conservation is not done now we will regret it. We are actively developing a cooperative plan involving central and local governments and the populace that uses forestry mechanisms to stimulate the development of a green economy." He also said, "Sustainable development requires comprehensive environmental resource management mechanisms that include forest management."

Dr. Paul Oquist Kelley expressed the opinion that Taiwan could have an important role to play in the transformations arising from global responses to sustainability. He stressed that it would be a role that could only be realizable by relying upon the framework of an international organization. It was clear that he was signaling his support for Taiwan's entry into international environmental organizations.

Chairman Ying-Shih Hsieh pointed out that in Taiwan, the Environmental Quality Protection Foundation, the Red Cross Society of the ROC, and the Forestry Bureau all attempted to introduce sustainable forestry planning into the reconstruction projects that followed the Typhoon Morakot disaster. They explored methods of forest regeneration such as soil and water conservation and combining the participation of local residents with their need for livelihoods to create a combination of sustainability and environmental protection that is compatible with people's modes of activity. He stressed that effective forest management must focus on the needs of local residents to make a living, so that both economic development and conservation can be achieved in tandem. Appropriate

forest management, he said, is helpful in creating the sort of green economy that will increase prosperity and social equality while reducing environmental risks and ecological disasters. His views were thoroughly supported by the other participants in the discussion.

Taiwan Local Government's Effort and Enthusiasm Recognized

Local governments worked exceptionally hard for the Rio+20 summit and even proposed specific actions, particularly through the Local Governments for Sustainability, founded in 1990 as the International Council for Local Environmental Initiatives (ICLEI), which includes Taiwan's Five Special Municipalities' governments among its members. ICLEI held their annual conference just before the opening of the Rio+20 summit and put forward some suggestions to the plenary. This resulted in the summit declaration emphasizing the role of local governments and sub-national governments – a significant advancement on the UN's *Agenda 21*.

At the Rio+10 conference in 2002, ICLEI led the call for urban resilience to be used to fight climate change; at the Rio+20 conference ten years later, ICLEI banged the drum for its urban resilience plan once again, this time with even more backing from other organizations.

Since a number of Taiwan's municipal governments are ICLEI members, Taiwan's specific achievements in promoting urban resilience (such as low-carbon cities, adapted cities, and eco-communities) were given voice during ICLEI presentations at the summit. This not only raised Taiwan's international visibility but, more importantly, let the world know about Taiwan's actual experience in combining the two important ideas of sustainable development and urban resilience.

One of Taiwan's delegates was Huang-Chen Chang, the head of Tainan City Environmental Protection Bureau, who said that local governments are the front line when it comes to dealing with businesses and local residents. In terms of sustainable development, what local governments do can blaze a trail for central government policy makers when they are trying to draw up and implement action projects that take into account regional attributes and unique features.

Taiwan's environmental agencies will continue to use ICLEI as an effective platform to promote national interests and engage in UN affairs. Taiwan is committed to offering practical help in the future promotion of urban and international affairs.

The team from Taichung City government observed that the green economy has already become a global trend and is being seen as a useful means to achieve sustainable development. Since Taichung City was selected to become Taiwan Central Region's Low-carbon City, the municipal government has been actively promoting low-carbon construction, and all of the formulated action plans are representative of the green economy. A promotion office has been established, as has a comprehensive sustainable development system that encompasses both central and local governments.

"We" Are Important Participants in "The Future"

Member nations of the UN participate and have their voices heard not only at official occasions, but also at the People's Summit and side events, where the enthusiasm and energy of their citizens is always evident. Drawing on this depth of talent, many national and local governments have already set about planning sustainable development projects for the next ten years. Unfortunately, during the three Earth Summits over the past 20 years, Taiwan was unable to attend as an officially recognized nation. This hardship gives the government of Taiwan an exceptional understanding that citizen groups are the foundation of civil society. The "We" in the title includes all of Taiwan's participants in international events.



▶ EPA Deputy Minister Yeh (third from the left) was in attendance in the side event of Rio+20 summit hosted by Taiwan

Soil and Groundwater

Cross-ministerial Cooperation to Control Soil and Groundwater Quality in Industrial Zones

In order to effectively prevent industrial pollution and protect public health, starting in 2010, the EPA began conducting overall inspections of the nation's 151 industrial zones, prioritizing inspections according to density of factories and complexity of operations. The EPA has also been integrating inter-agency resources, and has devised a system of colored "lights" – red, orange, yellow, and green – to signal different levels of intensity in terms of management work in the 151 zones.

For the 40 red- or orange-light industrial zones, from 2010 to 2012, the EPA has conducted precautionary and pollution inspections at 22 locations outside of the zones. The EPA discovered that ten industrial zones had soil or groundwater pollution that exceeded the stated maximums. The EPA has already linked up with the zones' industry competent authorities and local environmental agencies to instigate emergency response work.

The four zones that the EPA has given red lights to are those where serious pollution has been found in both the zones and in the immediate vicinities: Taoyuan County's Chungli Industrial Park, Miaoli County's Toufen Industrial Park, Taichung City's Taichung Export Processing Zone, and Kaohsiung City's Nantze Export Processing Zone.

At Toufen Industrial Park and Taichung Export Processing Zone, the EPA has already requested polluters and the industry competent authorities to make improvements (announced in 2005 and 2011, respectively). At Chungli Industrial Park, the EPA has expanded the inspections to include outlier data, confirming that the extent of the pollution there is confined to government-owned land next to the park. Manufacturers in the Chungli Park have also been prohibited from using groundwater for their manufacturing processes. Levels of pollution are gradually decreasing following improvements made in the southern pollution testing area at Taichung Export Processing Zone. At Nantze Export Processing Zone, the Export Processing Zone Management Bureau of the Ministry of Economic Affairs (MOEA) has been working with the EPA to implement pollution control measures and overall improvements. A sweep of potentially polluted areas around the Nantze Park by Kaohsiung City Environmental Protection Bureau

revealed that one privately owned well has been polluted. Local residents have been prohibited from drawing water from it, and the area will soon be designated as a groundwater pollution control area to protect the health of residents living in the immediate vicinity of the park.

The EPA has also discovered pollution in six of the orange-light industrial zones. Preliminary inspections indicate that the scopes of the pollution are mostly limited to the zones themselves, and the EPA has asked the local government environmental protection bureau to require the zones' management teams to implement response measures in accordance with *Soil and Groundwater Pollution Remediation Act* (土壤及地下水污染整治法) regulations. The bureau will also soon be instigating a follow-up investigation into the polluters' conduct. However, of the six orange-light parks, preliminary testing at Dadu Industrial Park indicated that groundwater outside of the park originally contained levels of cyanide above the stated maximum. Continuous inspections since have ensured that groundwater cyanide levels both inside and outside the park are now within the legal limit, and the task of verifying which manufacturers in the park use cyanide-containing raw materials is now underway. The EPA will continue to rigorously inspect all red- and orange-light industrial zones for soil and groundwater pollution, and expects to complete its inspections of the 40 zones that have high pollution risk by 2015. The EPA will continue to work with industry competent authorities to reinforce soil and groundwater quality testing in the industrial zones within their jurisdiction. The EPA will also be requiring the industry competent authorities to start submitting regular soil and groundwater quality testing reports before the end of 2014, in accordance with *Soil and Groundwater Remediation Act* regulations.

Soil and Groundwater

Soil Pollution Assessment Personnel System to Roll Out Soon

The Soil Pollution Assessment Personnel System will be officially launched on 1 December 2012 in order to promote a more professional system of soil and groundwater inspections.

Once the Soil Pollution Assessment Personnel System comes into effect, all inspections will be planned and carried out by registered assessment personnel in accordance with the inspection and test data requirements stipulated in Articles 8 and 9 of the *Soil and Groundwater Pollution Remediation Act* (土壤及地下水污染整治法). The EPA has clarified that assessment reports submitted to environmental agencies that have not been done by qualified inspectors will be automatically refused. It is in the interest of all applicants to pay particular attention to this point so that the processing of their applications is not delayed. Enterprises and members of the public who require assessments to be carried out should refer to the EPA's Soil and Groundwater Pollution Remediation Network (URL: <http://sgw.epa.gov.tw/public/>) for information on how to contact a qualified inspector.

After the Soil Pollution Assessment Personnel System comes into effect, assessment personnel will have 15 days after collecting soil and groundwater assessment data to publish their reports in the assessment personnel section of the Soil and Groundwater Pollution Remediation Network Web site. According to Articles 9 and 10 of the *Soil Pollution Assessment Personnel Management Regulations* (土壤污染評估調查人員管理辦法), all registered inspectors should attend at least 64 hours of seminars or training courses related to soil and groundwater inspections while they are registered with the EPA. Should they wish to renew their inspector's license, they should apply to the EPA no less than three months before their registration expires. The EPA urges all

registered assessment personnel to ensure that the number of hours of courses and seminars that they attend meets regulatory requirements to avoid having their applications for license renewal denied. In order to expand the professional knowledge of registered inspectors, the EPA will continue to offer seminars and training courses related to soil and groundwater inspections.

The EPA points out that if government agencies and organizations that plan to hold seminars or training courses related to soil and groundwater inspections can send in a hard copy of details of the courses along with an application form to the EPA at least one month before the start of the course, the EPA will then publish the details on the relevant page of the Soil and Groundwater Pollution Remediation Network Web site once the application is approved. Course organizers should submit the names of attendees to the Soil Pollution Assessment Personnel System at the end of each course or seminar so that the EPA can verify the information and update the files of the registered assessment personnel concerned. These files are referred to when the inspectors' licenses are renewed. Details of the application process and application forms will soon be posted in the assessment personnel section of the Soil and Groundwater Pollution Remediation Network Web site for interested parties to download. The EPA stresses that introducing a fully professional assessment and inspection system will raise the quality, accuracy and representativeness of the data, and reminds all stakeholders to make the necessary preparations before the system officially comes into effect.

Air Quality

Draft of Indoor Air Quality Analysis Management Regulations Pre-announced

The *Indoor Air Quality Control Act* (室內空氣品質管理法) was announced on 23 November 2011, and will take effect one year from the date. In order to enhance the uptake and administration of indoor air quality controls, the EPA has drawn up a draft of the *Indoor Air Quality Analysis Management Regulations* (室內空氣品質檢驗測定管理辦法) that will become the basis of a national system for controlling the indoor air quality of public premises.

The draft covers a number of regulations including: items to be analyzed and analysis frequency; sample quantities and sample distribution methods; items to be monitored and monitoring frequency;

monitoring equipment regulations; results publishing; and record keeping. In order to prevent the new regulations from causing any violations of citizens' rights, the EPA has also taken into account the additional facilities and procedures that operators of designated premises will need in order to conduct regular tests and continuous monitoring. A reasonable grace period will also be given in order to mitigate some of the inconvenience that implementation of the new regulations will inevitably cause: An improvement period has been designated from the date of promulgation of the regulations to 31 December 2013, during which fines will not be levied.

The EPA will also continue to work with other agencies in promoting self-management of indoor air quality control for designated public premises, while at the same time constructing a public premise indoor air quality online reporting system so that a better grasp of the indoor air quality situation in public premises may be had. The EPA will also be looking for suitable opportunities to implement improvements to indoor air quality, and is urging all operators of public premises to prepare for the upcoming changes to indoor air quality control so that their operations will not violate the regulations once they come into effect.

Air Quality

EPA Collaborates with Businesses to Establish Thirty Battery Swapping Stations in Kaohsiung City

The EPA has been actively promoting electric scooter battery swapping systems in order to improve air quality and solve the problem of electric scooter owners not being able to conveniently recharge their batteries. To this end, the EPA approved subsidies for two private companies – Kentfa Advanced Technology Corp. and CityPower Taiwan Co., Ltd. – to each establish 30 electric scooter battery swapping stations in the southern and northern part of Taiwan, respectively.

On 23 July, the EPA held a signing ceremony with Kentfa Advanced Technology Corp. to demonstrate the EPA's commitment to specific action in promoting the electric scooter battery swapping system. The EPA is keen to point out that electric scooters have some excellent eco-friendly features, such as low-polluting and low-noise qualities. This means that substituting electric scooters for motorcycles with conventional petrol engines not only resonates with trends toward saving energy and reducing carbon emissions but can also improve the environment and quality of life. Unfortunately, electric scooters are limited by the nature of the batteries that power them and hence are not yet as convenient to use as conventional combustion engine motorcycles. Thus, in order to make "recharging" an electric scooter more convenient, the EPA is working hard to promote the establishment of electric scooter battery swapping systems.

Currently, the biggest obstacle to the uptake of electric scooters is the reluctance of many members of the public to buy them due to concerns about price, functionality, and ease of use. Price concerns arise from the relatively high cost of changing the

battery when it no longer works properly; functionality concerns are mostly about the limited distance that the scooters can go on a fully-charged battery; ease of use is hindered by the relatively long time it takes to recharge the batteries and limited recharging locations. All of these problems can be mitigated to one degree or another by the introduction of electric scooter battery swapping systems that make "recharging" an electric scooter as easy as filling up a conventional motorcycle.

In addition, as with conventional gas stations, the electric scooter battery swapping stations will be run by specialist operators, and electric scooter riders will be able to pay according to the amount of electricity their batteries consume, similar to filling up a conventional vehicle at a gas station. This means that electric scooter riders will not need to pay the cost of maintaining or exchanging their batteries, thus bringing the vehicles more into line with people's needs.

In order to promote the electric scooter battery swapping system, the EPA has promulgated the subsidies for electric scooter battery swapping system

establishment and for the battery swapping fee. The EPA has approved applications from two private enterprises to each establish 30 electric scooter

battery swapping stations, which are currently being quickly set up.

Air Quality

Revisions to Stationary Source Air Pollutant Emissions Standards Pre-announced

There is a clear international trend toward stricter emissions standards, but Taiwan's emissions standards have not been revised for a number of years. The EPA has therefore decided to pre-announce revisions to the emissions standards for exhaust system particulate pollutants, which are part of the *Stationary Source Air Pollutant Emissions Standards* (固定污染源空氣污染物排放標準).

It has been over 19 years since the EPA first announced and started to implement the *Stationary Source Air Pollutant Emissions Standards* in 1992. Apart from a revision to the malodorous pollutants emissions standards in 2007, there have been no further revisions to other air pollutant emissions standards. However, emissions standards for particulate pollutants from stationary sources in other nations have been getting steadily stricter, and Taiwan's exhaust treatment technology has also been steadily improving. After assessing the feasible control techniques, cost-benefit analyses, and the actual emissions situation in Taiwan's enterprises, the EPA decided to revise Table 1 in Article 2 of the *Emissions Standards for Exhaust System Particulate Pollutants*.

The main points of the recent revision are as follows:

(1) After referring to particulate pollutant control trends in other advanced nations, the EPA decided to modify the standards by dropping the current system of calculating particulate pollutant concentrations (mg/Nm³) and adopting a complex exponential function formula to calculate emission flow rates (Nm³/min). A

single control standard will be applied, thus simplifying the standards.

(2) The current emission standards are only suitable for premises with emissions of 100 mg/Nm³ or under. Those with emissions of 2,000 Nm³/min or over will be categorized as a power plant and thus regulated by the *Power Generation Facilities Air Pollutant Emission Control Standards*. These standards are currently being reviewed, and it is possible that a separate set of standards for power plants will be formulated.

(3) The revisions to the *Emissions Standards for Exhaust System Particulate Pollutants* differentiate between industrial operations involving incineration and those without. The applicable standard maximum for pollution sources involving incineration processes established on or after January 2013 will be 50 mg/Nm³ and the applicable standard maximum for pollution sources involving incineration processes established on or before 31 December 2012 will be 100 mg/Nm³. For non-incineration operations, the applicable standard maximum values for pollution sources will be 100 mg/Nm³, beginning 1 January 2013.

EIA

Analysis Report on Difference of Environmental Impact for Formosa Plastics Naphtha Cracker Plant Expansion Approved

On 25 July 2012, the EPA's Environmental Impact Assessment Committee passed the Seventh Analysis Report on the Difference of the Environmental Impact for the fourth stage of Formosa Plastics' sixth naphtha cracker plant. The EPA stresses that the fourth stage of expansion will begin following reductions in volumes of pollution emissions, water consumption, and greenhouse gas emissions by the factories already present within the sixth naphtha cracker plant. On-site inspections have verified that the reductions from the existing operations are greater than the emissions to be produced by the new factory. The EPA's Environmental Impact Assessment Committee has reviewed the analysis report and passed it with revisions, and so the fourth stage expansion plan can now go ahead.

The expansion will see Formosa Plastics Group join up with Kraton Polymers of the US to invest in a new 40,000-tonne hydrogenated styrenic block copolymer (HSBC) plant that will mainly use butadiene, C5 isoprene, and styrene that is being produced at the sixth naphtha cracker plant. The new plant will increase the total capacity of the sixth naphtha cracker plant by 0.06% without increasing ethylene production. The HSBC plant's products are modifiers that can add durability and flexibility to polypropylene/polyethylene (PP/PE) and are used in medical and electronic products, cables, adhesives, and protective film for electronic panels. The HSBC plant will occupy 6.82 hectares of land, which is approximately 0.26% of the total land area for the sixth naphtha cracker plant. If the HSBC plant were an independent unit, it would not need to undergo an environmental impact assessment, but since it is a part of the sixth naphtha cracker plant development, then an analysis of the difference of environmental impact is required.

The new HSBC plant operations will result in an increase in air pollutant emissions: suspended particulate matter by around 9 tonnes annually, NO_x by around 30 tonnes annually, and VOCs by around 46 tonnes annually. There will also be an increase in

hazardous air pollutant emissions: butadiene by about 0.7 tonnes annually, isoprene by about 0.6 tonnes annually, and styrene by around 2 tonnes annually. The new factory will use 1,440 tonnes of water, and will produce 482 tonnes of wastewater daily. It will be responsible for a total increase in greenhouse gas emissions of 123,000 tonnes per annum. The developer has already verified that emissions reductions at the sixth naphtha cracker plant exceed the above forecasted increases in emissions. The Environmental Impact Assessment Committee also requested that greenhouse gas emissions for the new factory should be brought down to 150% of estimated emissions, and water consumption to 200% below the estimated wastewater discharge rate.

The EPA's Environmental Impact Assessment Committee has also discussed the question of the sixth naphtha cracker plant's overall consumption of water, an issue of public concern, and has pressured the developer to speed up the implementation of an alternative water supply with agriculture return flow. The committee has also asked the Yunlin County government to lend assistance in overcoming the current administrative difficulties so that the project can be completed within a reasonable timeframe.

Briefs

Carbon Footprints Are Shown on Taiwan Railways' Lunchboxes

According to estimates, the people of Taiwan eat about five billion lunchboxes every year. In order to gain a better understanding of the impact of lunchboxes on global warming, the EPA and the Taiwan Railways Administration joined forces to conduct carbon footprint surveys on three different types of lunchboxes. The EPA held a ceremony on 10 July 2012 to announce the results and to award Taiwan's first lunchbox carbon footprint labeling certificate.

It was announced at the ceremony that three different types of pork chop lunchbox sold on Taiwan's trains had carbon footprints of 1.3 kg, 1.4 kg, and 1.5 kg of CO₂ equivalents. The Taiwan Railways Administration pledged to reduce the average carbon footprint of their pork chop lunchboxes by 5% over the next three years.

The EPA is keen to point out that since the launch of the Product Carbon Footprint Labeling Certificate system in May 2010, the EPA has received and approved applications for 107 products from 40 different manufacturers. The



▶ The EPA awards Taiwan's first lunchbox carbon footprint labeling certificate to the Taiwan Railways Administration

carbon footprint label carries the product's carbon footprint data so that consumers can make more informed decisions when purchasing products.

Excessive Chlorinated Organic Solvent Pollution Found at 16 Factories

Since 2007, the EPA has been conducting a soil and groundwater pollution potential survey of all the factories in Taiwan that use chlorinated organic solvents, and by 2011-2012 has completed pollution assessments of 84 factories. A total of 26 factories were assessed as having high pollution potential, and soil and groundwater samples were taken. Results from the testing indicated that 16 of them – one in New Taipei City, six in Taoyuan County, one in Taichung City, three in Changhua County, two in Tainan City, and three in Kaohsiung City – had soil or groundwater pollution that was above permitted maximums. Seven of them had single pollutant concentrations 20 times over the limit, and require remediation. The highest concentration of a single pollutant discovered was dichloromethane at 10,480 times the legal maximum. The local government environmental protection bureaus have already demanded that the enterprise in question adopts emergency response measures in accordance with *Soil and Groundwater Pollution Remediation Act* (土壤及地下水污染整治法) regulations, and is carrying out combined air, water, waste,

and toxic substances inspections to mitigate the pollution hazard and stop it from spreading. The factory will also be announced as being a soil and groundwater pollution site.

Information on Soil and Groundwater Phytoremediation Now Available for Downloading

From 26-27 June 2012, the Taiwan EPA and the US EPA jointly held a workshop on phytoremediation. Science committee members from each of the nations that make up the Asian Soil and Groundwater Pollution Remediation Work Teams were invited. The workshop started with an introduction to phytoremediation techniques and application principles followed by discussions of actual remediation cases. Some of the specific techniques introduced included: using plants to remediate sites that have been contaminated with organic and non-organic pollutants; covering, greening, and beautifying landfill sites; establishing constructed wetlands; and using plants growing at polluted sites to identify the original polluter. The US EPA's copious applied cases should prove to be of great reference value to Taiwan, and the teaching material and reference documents used at the workshop have been published on the EPA's soil and groundwater remediation Web site at (http://sgw.epa.gov.tw/public/Result_View.aspx?Id=4) for interested parties to view or download.

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