



Environmental Policy Monthly

Environmental Protection Administration, R.O.C. (Taiwan)

Feature Column

Regulations and Policies for Resource Recovery

Taiwan's resource recycling policy is based on source reductions, recycling and reuse of all materials. In an effort to put the Resource Recycling and Reuse Act into full play, the EPA will continue to divide work among various government agencies and promote efficient reuse of resources in all fields. Full cooperation of the citizenry will help ensure timely implementation of various measures to achieve the goal of zero waste.

Waste management today is different from the past focus on end-of-pipe management. Taiwan's resource recycling and reuse system curbs the generation of waste by adopting concepts and methods based on source reductions, recycling and reuse of all materials. Consideration is also given to conservation of energy and resources. The main concepts behind waste management policy are reduction, resource recovery, reuse and recycling.

Source Management, Resource Recycling and Reuse Act Promulgated

Taiwan promulgated the *Resource Recycling and Reuse Act* (資源回收再利用法) on 3 July 2002 to promote efficient use of resources. This Act is built around the concept of product life cycles and comprehensive planning starting from initial design,

manufacture, and use, and extending to recovery and reuse. The Act comprises six parts starting with guiding principles, source management, operations management, guidance and incentive measures, penalties and an appendix.

After the Act was promulgated, the EPA's Renewable Resource Recycling and Reuse Promotion Committee (RRRRPC) was established in 2003. This committee reached the following consensus: the EPA should actively convene ministries for negotiation and discussion on the drafting of a "Resource Recycling and Reuse Promotion Plan Framework," to be proposed to the committee for review. This framework was built to achieve the objectives of waste reduction and resource recovery. Work was divided among each ministry in the "Resource Recycling and Reuse Promotion Plan" based on the Act's goals for source

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management, operations management, guidance and incentive measures. Eight main strategies (see chart) were developed with the planned timeline lasting from 2004 to 2020.

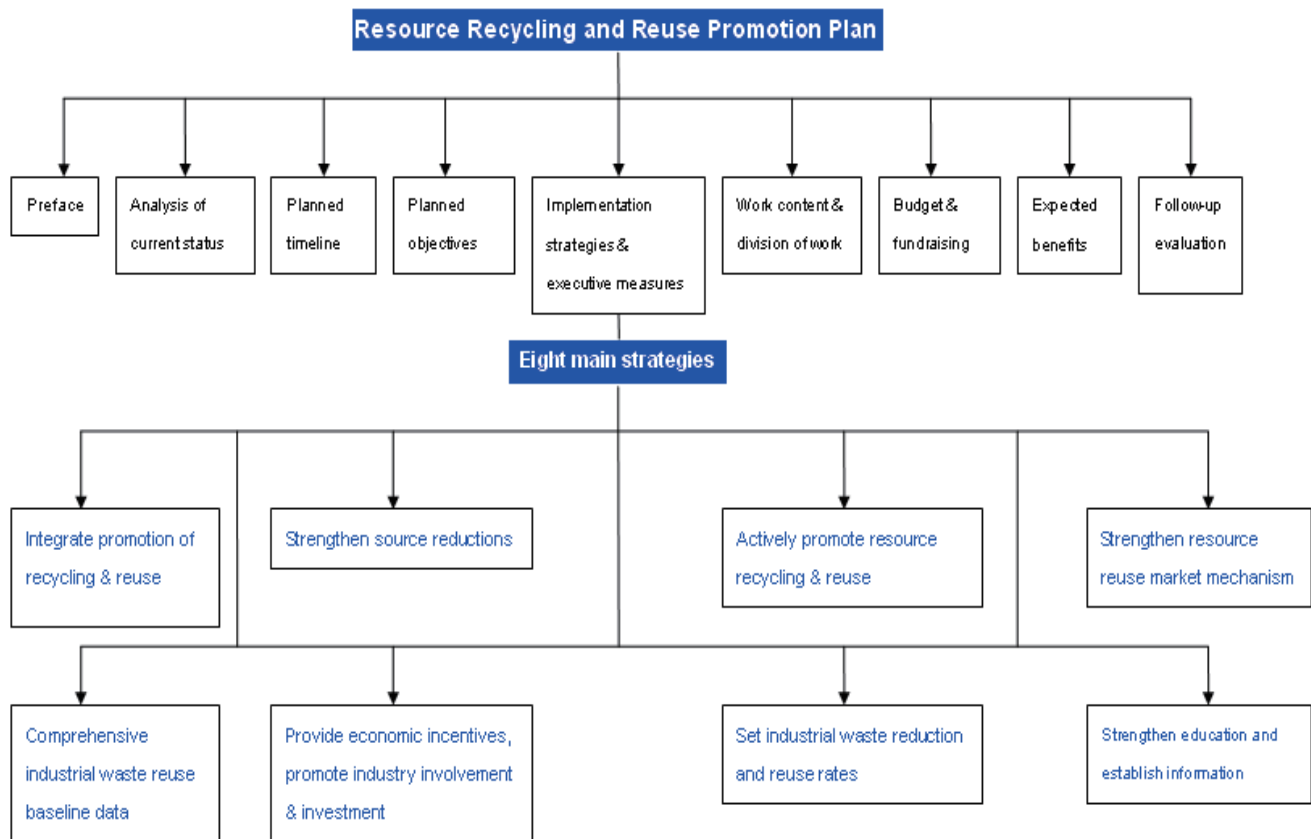
Since implementation of the "Resource Recycling and Reuse Promotion Plan," results of the RRRRPC's work and related resource recycling and reuse promotion efforts have been shared with each ministry and are shown on the "National Resource Recycling and Reuse Information Network." (http://waste1.epa.gov.tw/ier_web).

Management of industrial waste reuse and renewable resources involves various ministries and requires their promotion of resource recycling and reuse. The same is true for activities to select outstanding performers in industrial waste and renewable resource clearance and treatment. In order to expand practical exchange and bring resource recycling objectives to fruition, the EPA organized the "Plan for Promoting Integrated Resource Recycling and Reuse and Selecting Outstanding Industry Performers" in 2007. The RRRRPC, the Renewable Resource Recycling and Reuse Working Group, and the National Resource Recycling and Reuse Information

Network all work together as an exchange platform to effectively promote resource recycling and reuse among all ministries. The current framework plan for promoting resource recycling policy is shown in the chart.

Regulations integrate life cycle concept for greater environmental benefits

Changes that have happened since the promulgation of the Resource Recycling and Reuse Act necessitate some of the content to be revised. To ensure this Act is implemented in a practical manner, the EPA revised Article 6 on 21 January 2009. The original article states, "in order to achieve sustainable reuse of resources based on feasible technology and economics, the use of materials should prioritize reduced generation of waste. After a material loses its original usefulness, further use without making physical changes should be the first consideration, followed by recycling into another product, energy recovery and finally appropriate treatment." To this it has been added that, "Maximization of the lifecycle of materials shall be considered so that those finding best overall environmental benefits of waste are exempt from the above order of prioritization."



▶ Chart: Resource Recycling and Reuse Promotion Plan Framework

As for now and the near future, general waste clearance and treatment work will continue to be based on zero waste, source reductions, and resource recycling. This will be implemented through a combination of plans and measures including the "Mandatory Garbage Sorting Promotion Plan," the "Food Waste Recovery and Reuse Plan," the "Garbage Treatment Follow-up Plan," the "New Image for Incineration Plants" project, the "Environmental Science and Technology Park Promotion Plan," the "Implementation Plan to Evaluate Newly Announced Recyclables," and the "Plan to Raise Recycling Rates of Announced Recyclables." With reference to a baseline of 8.33 million tonnes of garbage generated in 2001, total reduction goals set for years 2007, 2011, and 2020 are 25%, 40% and 75%, respectively. The 2007 goal has already been reached.

In terms of the management direction for industrial waste, the Resource Recycling and Reuse Act has set forth a 17-year Resource Recycling and Reuse Promotion Plan. Since implementing horizontal mechanisms to facilitate cross-ministerial work, each type of industrial waste recycling and reuse has already reached a 70% reuse rate. The EPA will cooperate with each ministry in the future to promote efficient recycling and reuse of resources, while at the same time minimizing generation of industrial waste and maximizing reuse.

Cross-ministerial promotion of resource recovery to promote zero waste

The EPA deemed a system of economic incentives as the most effective method to promote industry's voluntary participation and investment in resource recycling. This strategy calls for measures such as special financing deals, tax deductions and exemptions, and deductions on investments. It also includes assistance in obtaining environmental technology or land for renewable resource recovery and reuse. These measures were drawn up in coordination with the EPA's Environmental Science and Technology Parks.

Another part of promoting resource recycling and reuse among all ministries includes promoting further transparency and exchange of information by establishing new Web pages, announcing progress reports, and progressively achieving information disclosure goals, as well as providing channels for all circles to exchange views.

Appropriate treatment of waste and recycling of resources is an important issue that is intrinsically linked to everyone's lives. In the future, the EPA will continue to work through all government agencies and divide the task of recycling among all fields as well as seek the cooperation of citizens to help put measures into practice. With everyone's help, Taiwan will soon be able to realize its zero waste goals, enhance environmental quality, and establish a sustainable homeland.

Waste Management

Revisions to Strengthen Management of Resource Recycling and Treatment Industry

The EPA issued a preannouncement of draft revisions to the *Management Regulations for Recycling Enterprises Handling Recyclable Waste* (應回收廢棄物回收處理業管理辦法) on 19 August 2009. The revisions will step up administrative efficiency, make information more transparent, allow reporting over the Internet, and enhance recycling and treatment work.

The main points of this draft revision include: 1) Complement information management systems by providing online application services in stages; 2) add stipulations on vehicle recycling methods and reporting of end-of-life machinery to strengthen management of waste motor vehicle recycling and

reporting; 3) add stipulations on reporting guidelines for industries that treat mandatory recyclable waste containing hazardous ingredients; 4) revise review methods and work deadlines of registration organizations.

The EPA indicates that according to the *Waste Disposal Act* (廢棄物清理法), industries of a certain scale or above engaged in recovery and treatment of mandatory recyclable waste must register with competent authorities and report recovery and treatment volumes as well as status of operations. According to the *Management Regulations for Recycling Enterprises Handling Recyclable Waste* (應回收廢棄物回收處理業管理辦法), the EPA is responsible for handling registration, changes, revocation, and registration of business of these industries, as well as stipulate they adhere to related measures. This ensures effective management of industries engaged in recovery and treatment of mandatory recyclable waste, and prevents pollution of the environment during recovery and treatment processes.

To complement the above revisions, recovery and treatment industries can submit information conveniently and more efficiently over the Internet instead of going through the complicated procedure of filing on paper. The EPA will also strengthen stipulations regarding management over reporting of hazardous substances and end-of-life motor vehicles. This will safeguard the rights and interests of the public and help put an end to pollution from hazardous substances.

Detailed information on this preannouncement can be found on the EPA's Web site (<http://share1.epa.gov.tw/epalaw/>) in the regulation preannouncement section.

Soil & Groundwater Management

Expanded Underground Oil Storage Pollution Prevention and Monitoring

In order to effectively prevent pollution of groundwater, the EPA has issued a preannouncement of revisions to the Management Regulations for Installing Facilities and Monitoring Equipment at Underground Oil Storage Systems to Prevent Pollution of Groundwater. Details are posted on the EPA Web site under the preannouncement section (<http://share1.epa.gov.tw/epalaw/index.aspx>).

The EPA indicates that while this regulation was once revised in 2006 since its promulgation in 2002, it has already been three years since further revisions. After reviewing the existing articles and problems with actual implementation, the EPA has made further amendments, the focus of which is as follows:

1. The term "gas station" has been revised to "underground oil storage system." Regardless of whether it is a gas station or not, any enterprise with an underground storage tank containing gasoline or diesel fuel for any use must abide by this regulation.

2. The definition of underground storage tank has been revised and clarifications have been made to the meanings of open conduit, secondary barrier, suspended use, permanent closure and changes to use of facilities.

3. It has been added that installation plans and project completion reports should be submitted online for construction or renovation of underground oil storage systems.

4. Regulations have been added requiring regular inspection to ensure cathodic protection has been installed on facilities.

5. A regulation has been added to require annual tests for liquid retention and ensure equipment to prevent leakage from gas filling equipment is installed and functioning normally.

6. An existing article requiring seal tests to serve as one technique of monitoring has been deleted and replaced by a requirement for regular testing to ensure command over the status of oil storage tanks.

7. In view of the fact that a secondary barrier serves a monitoring function to prevent oil leaks and essentially

requires tank monitoring, the former article exempting tanks with a secondary barrier along conduit from monitoring has been deleted.

8. A stipulation has been added requiring that existing underground oil storage systems comply with new regulations within one year after this revision takes effect.

Water Quality

Emergency Response Prevents Pollution from Five Grounded Ships

Typhoon Morakot caused the grounding of three ships in the Pingtung area and two ships in the Kaohsiung area. The EPA immediately activated the marine pollution emergency response mechanism and held six meetings to coordinate the integration of resources and manpower from each ministry. The emergency response for the two ships grounded in the Kaohsiung area was carried out by the local government.

The EPA reported on the status of each grounded ship and response measures taken:

W-O BUDMO oil tanker: Holding 100 tonnes of heavy oil and 70 tonnes of diesel fuel, this tanker was grounded about a kilometer south of the National Museum of Marine Biology and Aquarium in the Houwan District, Checheng Township, Pingtung County on 7 August 2009. No oil leaks were found. The sandstone coast complicated relief efforts, so to prevent oil pollution from occurring the EPA

immediately established a response operation by the Central Government Oil Pollution Emergency Response Center on the first evening. The Pingtung County Environmental Protection Bureau (EPB) and the Coast Guard Administration (CGA) also set up monitoring and control duties on that day. Oil removal was completed by 21 August, and the Kaohsiung Harbor Bureau took over the task of removing the ship on 26 August, at which time the emergency response period was over.



▶ Oil removal was completed by 21 August for W-O BUDMO

1. VOGO-1 and VOGO-2 tug boats: Carrying 121 tonnes and 111 tonnes of diesel fuel respectively, one was grounded offshore of Fangshan Township and the other at Haikou Harbor in Pingtung County. VOGO-1 did not leak, while VOGO-2 had a light spill of diesel fuel. The Pingtung County EPB immediately established an emergency response center and implemented emergency response measures. Oil removal was completed on 26 August for VOGO-1 and on 1 September for VOGO-2, after which the emergency response period ended and the Kaohsiung Harbor Bureau took over the task of removing the ships.

2. The Baili bulk carrier: This ship was carrying 441 tonnes of heavy oil and 140 tonnes of diesel fuel, and on August 9 was reported to be grounded on a beach near the mouth of the Erren River south of the Yongan

Natural Gas Industrial Port in Kaohsiung County. No leaks were discovered. The Kaohsiung County EPB and the CGA are monitoring the ship and the Japanese maritime company responsible towed the boat away on August 14, at which time the emergency response period drew to a close. SEAGREEN ENTERPRISE Co., Ltd (海歷公司) is responsible for preventing any oil pollution.

3. The ZD TOPOINT chemical tanker: Carrying 84.5 tonnes of heavy oil and 13 tonnes of diesel fuel, this ship was grounded on a beach near the Cijin Beach in Kaohsiung on August 8. The ship is completely intact without any signs of spillage. The Kaohsiung City Marine Bureau took over monitoring of the ship and completed oil removal on August 21. The ship was towed away on September 1 and the emergency response period drew to a close.

Air Quality

Diesel Vehicle Exhaust Controls To Be Tightened

The EPA has decided to tighten vehicle exhaust standards in compliance with world environmental trends and encourage industry to introduce and produce clean cars that use the latest pollution prevention technology. The EPA has referred to the EU Euro 5 control standards and has deliberated the completion of a draft regulation to tighten diesel vehicle exhaust standards. The new standards are slated for implementation on 1 January 2012, at which time pollution from vehicle exhaust will see substantial improvements.

The EPA states stricter exhaust standards will not only fit with international environmental trends but will also raise the standard of domestic car manufacturing technology. It is thus an important control measure for improving pollution from vehicle exhaust. The EPA has referred to the latest control strategies adopted by advanced nations including the EU and the US in drafting a stricter *Article 5 of the Vehicle Air Pollutant Emission Standards* (交通工具空氣污染物排放標準) to improve the nation's air quality.

The main revisions to Article 5 of the Vehicle Air Pollutant Emission Standards are as follows. For light diesel cars the NO_x control standard has been tightened 28% from 0.39 g/km to 0.28 g/km, and the particulate matter control standard has been tightened 91% from 0.06 g/km to 0.005 g/km. For heavy diesel cars the NO_x control standard has been tightened

42% from 3.5 g/km to 2.0 g/km, and the emission standard on black smoke has been tightened 40%, from 25% to 15%. With reference to the Euro 5 standard, which will take full effect by 1 January 2012, the date of effectiveness for Taiwan's new standards will also be 1 January 2012. US vehicle models that conform to these new standards will also be certified.

The EPA states that the draft revision of the fifth article for vehicle air pollutant emission standards has been posted on the EPA Web site under the regulation preannouncement section (<http://w3.epa.gov.tw/epalaw>). All circles with recommendations regarding this draft revision are welcome to submit their views. The EPA hopes that everyone shows their concern for improving air pollution and does their part to create a sustainable environment.

Air Quality

HCFC Consumption Regulations Revised to Step Up Reductions

In response to international control trends, the EPA is calling for annual reductions of HCFC consumption with a goal to remain below 25% of baseline levels starting from 2010. The EPA promulgated revisions to the HCFC consumption regulations on 5 August 2009 to facilitate this goal.

Since the *HCFC Consumption Management Regulations* (氟氯烴消費量管理辦法) was promulgated in 2003, controls have been in place for the import, export, manufacture, and use of HCFCs, and an allocation system has led to the gradual reduction of HCFC consumption. From 1996, it was stipulated that HCFCs could not exceed Taiwan's baseline consumption level of 638.156 ODP tonnes. By 2004, consumption had dropped to 65% of the baseline at 414.801 ODP tonnes.

During the 19th Meeting of the Parties to the Montreal Protocol (MOP19) in 2007 it was decided to accelerate the phase out of HCFCs. Developed countries as listed in Article 2 were required to step up reductions of HCFC consumption and production from 65% of baseline levels to 75% by 2010, achieve a 90% reduction by 2015, and between 2020 and 2030 maintain consumption levels of 0.5% of baseline levels. This resolution went into effect on 14 May 2008.

Since 1990 Taiwan voluntarily promised to adhere to the Montreal Protocol by fulfilling duties as a developed country. In response to international control trends asking for achievement of first stage reduction goals (from 2010, annual HCFC consumption may not exceed 25% of baseline levels, or 159.539 ODP tonnes), Taiwan drafted revisions to the HCFC Consumption Management Regulations. The revisions include a timeline for banning uses of HCFC when technically and economically feasible uses already exist. The main points of the revision are as follows:

1. In order to implement practical calculated baselines of assigned HCFC amounts, evidence and data should be provided to verify and delineate what constitutes practical levels.

2. Based on the MOP19 resolution to accelerate the phase out of HCFCs, the national goal for reducing consumption of HCFCs has been stepped up from

65% of baseline levels to 75% by 2010.

3. A timeline for reducing the original production levels of HCFC has been added.

4. Based on current status of technologically and economically feasible alternatives for HCFC uses, it has been added that from 1 January 2010, a timeline will be implemented for halting HCFC uses in solvents, refrigerants and foaming agents. Production of HCFC for these uses will be banned from 1 January 2011.

5. Based on the timeline for halting the production and manufacture of HCFC for various uses, the EPA will simultaneously ban their manufacture and use, as well as the import of products containing HCFC.

6. It has been added that for companies applying for allocation qualification for the first time, allocation amounts should be based on national extra HCFC allocation amounts for that year.

7. As HCFC consumption should only be 0.5% of baseline levels in 2020, this revision plans for extra allocation amounts to serve as an incentive for companies engaged in recycling.

8. To put an end to HCFCs being put to uses banned in this regulation, companies that use and supply HCFCs are required to report documents verifying their current status.

9. In order to track the flow of HCFCs, it has been specified that the data in suppliers' reported documents should be reviewed and the companies selling related products should be reported before they can sell HCFC products.

10. Changes to company or factory names should be reported to the central competent authority for review to avoid duplicating applications for allocations.

General Policy

Morakot Affected Area Rebuilding and Environmental Advisory Team Established

EPA Minister Stephen Shu-hung Shen has convened a team of experts in central and southern Taiwan in response to the aftermath of the disaster wrought by Typhoon Morakot to assist with rebuilding and guarding against further disaster. The team will assist survivors and government agencies with environmental rehabilitation and planning, serving as a bridge between the people and government to facilitate rebuilding efforts.

EPA Deputy Minister Wen-Yan Chiau reported the current situation of the disaster and relief efforts to a group of over 20 environmental experts and scholars on 20 August 2009, and further organized a group headed by universities in central and southern Taiwan to establish the "88 Disaster Area Rebuilding and Environmental Advisory Team." Chiu indicated that Typhoon Morakot brought torrential rains that have not been witnessed for centuries, urgently necessitating the application of environmental data toward systematic surveys, recording, compilation, and analysis to serve as a reference for environmental cleanup, disaster prevention and national land planning and evaluation. This information will provide the basis for land rehabilitation and reducing or preventing disasters in the future.

Addressing follow-up disaster response including rebuilding and environmental rehabilitation, the EPA has already successfully organized over 20 experts and scholars from 14 universities and 20 environmental inspection organizations to form the "88 Disaster Area Rebuilding and Environmental Advisory Team." In as short time as possible, the team will collect and analyze data in disaster areas on the current status, changes and impacts concerning air quality, odors, and water quality. They will also assist survivors with environmental rehabilitation and rebuilding of disaster areas to serve as an important reference for national land planning.

The team will divide work across the five regions of Pingtung County; Taitung County; Kaohsiung County and City; Tainan County and City; and Yunlin County, Chiayi County and Nantou County. Five working groups will specialize in environmental surveys, disaster monitoring and control, rehabilitation and planning, education and outreach, and socioeconomic work, respectively. Team members will perform in-depth work in disaster areas, onsite surveys of environmental changes, needs of survivors, and

analysis and comparison of contrasting satellite images, fully utilizing GIS technology to prepare recommendations for government agencies.

The EPA said environmental surveys will be carried out promptly and cover hydrology, water quality, air quality, odors and waste problems. Details include:

1. Collect and compile historical data: collect data from past years including studies, monitoring, tests and aerial photos and other data from each government agency and organization.
2. Hydrology surveys: Collect data on the current status, flow, flow rate, depth, and flood plain of river basins.
3. Water quality monitoring: Monitor the water quality of water bodies and drinking water (or provisional water facilities) in the vicinity of disaster areas.
4. Air quality monitoring: Monitor air quality, indoor air quality and odors in the vicinity of disaster areas.
5. Soil and groundwater monitoring: Conduct surveys on soil composition and characteristics, and analyze groundwater quality of existing wells.
6. Waste inspection: Survey categories of waste, and treatment and environmental monitoring of disposal sites.

The EPA states that the results of these surveys will be valuable for disaster prevention on national land and rebuilding disaster areas, and will be made available for all to use. Environmental engineers, geologists, humanitarian workers, and socioeconomicists hope the implementation of this plan will transcend political mudslinging by promoting practical action that draws on concerted efforts from all circles to assist disaster victims and local rebuilding efforts.

Toxic Substance Management

Mosquito Coil Dioxin Content Restricted to 20 pg I-TEQ/g

The EPA announced that when dioxin content of mosquito coils is found to exceed the restricted value of 20 pg I-TEQ/g, the central competent authority should revoke the manufacturer's environmental agent permit. This measure will help confirm whether dioxin content of mosquito coils is up to standard to safeguard citizen health and protect consumers' rights and interests.

The EPA indicates new restrictions of dioxin content in mosquito coils have been set with reference to promises made during a press conference on 25 July 2009 to protect the health of citizens by drafting dioxin testing standards for mosquito coils within one month. This regulatory system is based on *Article 10~2 of the Environmental Agent Management Act* (環境用藥管理法), which states, "to protect citizen health and the ecosystem, the central competent authority should revoke the violator's permit." In line with the Administrative Procedures Act, the EPA has convened the "Expert Advisors Meeting on Mosquito Coil Dioxin Test Restriction Values," and the "Meeting on Mosquito Coil Dioxin Testing Restriction Values." The values were a result of consensus reached during these meetings.

The EPA states that if random testing of mosquito coil products on the market shows dioxin levels greater than 20 pg I-TEQ/g, the EPA will annul the manufacture or import permit according to *Article 10~2 of the Environmental Agent Management Act*. The company will be further required to recall all products within a given deadline. If the company responsible for manufacture or import of the mosquito coils fails to recall its product before the deadline, it could be fined from NT\$60,000 to NT\$300,000 and be required to make improvements before a given deadline. If no improvements are made or the situation becomes more serious, the company could have not only its permit canceled, but also its operating license. If necessary, the company will be required to suspend work, suspend operations or shut down its business entirely.

Environmental Analysis

Prefab Shelters from China Meet Recommended Limits for Formaldehyde and VOCs

EPA Environmental Analysis Laboratory personnel were recently in the Jiadong disaster area to conduct tests on formaldehyde and total VOCs in indoor air of prefabricated shelters from China. Test results show no formaldehyde but some VOCs when no air circulation is permitted inside, recording 11.3 ppm within the first hour and approaching the indoor air quality recommended limit (3 ppm) at 3.5 ppm by the sixteenth hour. When circulation is permitted, VOC concentrations are well within the recommended value.

The EPA indicates that since prefabricated shelters were set up by the Construction and Planning Administration on 21 August 2009, Environmental Analysis Laboratory personnel immediately set to work on conducting indoor air quality, monitoring day and night. The specialists simulated residential conditions and habits and began to monitor formaldehyde and VOC concentrations with and without air circulation.

Sampling began without circulation at ten o'clock in the evening when windows may be closed in normal residential circumstances. Doors and windows were

closed and continuous sampling was conducted throughout the first hour to determine formaldehyde and VOC concentrations. Samples were taken every four hours. Formaldehyde sampling methods employed a suction device to intake 100 cc of air per minute and collect it in absorbent liquid. VOC sampling employed a stainless steel vacuum to intake 80 cc per minute. Sampling continued until two o'clock in the afternoon of the next day giving a total of 6 samples taken over a period of 16 hours. Then all windows and doors were opened and indoor air quality was monitored again with circulation permitted.

High-performance liquid chromatography and gas chromatography were employed to analyze formaldehyde and VOCs of samples. Test results showed no trace of formaldehyde with or without circulation in the house. VOCs were present at 11.3 ppm within the first hour and accumulated to 15.7 ppm by the fourth hour. VOC concentrations dropped by the eighth hour and by the sixteenth hour had already come close to the recommended value for indoor air quality (3 ppm) at 3.5 ppm.

It was shown that after VOCs were allowed to permeate all of the indoor air during closed conditions, once doors and windows were opened total VOC

concentrations decreased so as to comply with recommended limits for indoor air quality throughout the course of one full day. Circulation was permitted after the sixteenth hour, and air quality was continuously monitored to show that on the afternoon of the third day VOCs were under 1.7 ppm. This clearly indicates that upon fully opening doors and windows, and maintaining circulation with outdoor air, indoor air quality easily complies with the 3 ppm recommended limit. The EPA recommends that residents preparing to live in prefabricated shelters should first open the doors and windows for a day to ensure safe indoor air quality before moving in.

Noise Control

Drafting of Non-ionizing Radiation Early Warning Measures Underway

The EPA is abiding by the precautionary principle to ease the public's concerns regarding electromagnetic radiation. Taiwan has referenced early warning measures from countries around the world while also taking into consideration local factors in setting early warning values for electromagnetic radiation.

According to the WHO's most recent research, there is still no unanimous scientific evidence on non-ionizing radiation (also referred to as electromagnetic waves) and whether any eminent effects on human health exist. Considering Taiwan's population density and the potential magnitude of electromagnetic wave sources emanating throughout the public's living environment, the EPA focuses serious attention on this issue. The EPA has set up a platform to ensure both "public participation and professional representation." A team of specialists has been selected to hold forums for exchange of views and discussion.

This team is comprised of electronics, communications engineering, public health, and risk assessment professionals who were mutually recommended by representatives from environmental groups, industry, the Department of Health, and the National Communications Commission. These professionals are expected to engage in impartial and objective discussion on matters concerning electromagnetic wave early warning mechanisms and risk assessment. To date, two professional forums have already been held.

To protect the public from excessively high exposure to electromagnetic fields (EMF) emitted

from electromagnetic wave sources, the EPA has referenced the Non-ionizing Radiation Recommended Environmental Values for General Public Exposure formulated at the 1998 International Commission on Non-ionizing Radiation Protection (ICNIRP), a non-governmental organization formally recognized by the WHO. In January of 2001, the government announced the nation's "recommended limits for general public exposure in non-occupational environments for all frequency ranges of non-ionizing radiation." These recommended values are short-term exposure limits, and are commensurate with the current standards set by advanced nations, such as the European Union, the United States, and Japan.

Today most countries around the world have adopted the general public EMF recommended values formulated by the ICNIRP as the control model for electromagnetic waves, while a handful of countries use the ICNIRP guidelines as the foundation for setting even stricter standards. Aside from referencing the ICNIRP recommended values for exposure limits and health risks, Switzerland, Italy, and Israel also factor in the social costs, economic costs, and public health protection of the public's long-term residual exposure, and for particularly sensitive areas (such as residential areas, schools, hospitals, and children's playgrounds) to establish "long-term exposure

early warning values” and spatial distance limitation measures.

The EPA strives to ensure the public's health and safety, and ease concerns regarding non-ionizing radiation in the environment. Throughout this process, the EPA continues referencing both early warning

measures formulated by other nations and the conclusions derived by local specialists' impartial and objective review, assessment, and dialogue at professional forums. This forms the basis of the EPA's ongoing policy-making efforts to improve the nation's environmental non-ionizing radiation early warning mechanism.

International Cooperation

Cross-strait Cooperation Sought to Resolve Kinmen Air Pollution

The EPA is actively investigating the issue behind a recently published report, “Kinmen Air Contains Three Times Higher Arsenic Levels than Taipei, Fujian Factory Pollution Suspected” and plans to establish a “Cross-strait Environmental Protection Affairs Cooperation Advisory Commission.” This commission will pursue dialogue on this issue and implementation of solutions. Cross-strait communication and cooperation mechanisms are hoped to effectively resolve the problem of long-range transmission of air pollution.

Taiwan is geographically positioned downwind of China and prone to receiving long-range transmission of air pollutants. Long-term air quality monitoring data indicates that sources of air pollutants are located as far away as northern China, where dust storms originate, and the coastal industrial belt, where industrial pollutants are emitted. These pollutants not only adversely impact the closer proximity of Kinmen, but mainland Taiwan as well.

In 2000 Japan, South Korea, and China began working together to study solutions to transboundary pollution problems. Taiwan has been working together with the US Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), and National Oceanic and Atmospheric Administration (NOAA) on an international monitoring cooperative. In 2006, an international-grade

background air quality monitoring station was installed at 2,862 meters on Mt. Lulin in central Taiwan to monitor cross-region transmissions.

In order to better understand transboundary transmission of air pollutants and their impact, the EPA has referenced international practices and experiences during the planning process for establishing the “Cross-strait Environmental Protection Affairs Cooperation Advisory Commission.” This commission will engage in discussion, pursue resolution methods, and work on implementing measures to confront the impact of long-range transmitted pollutants from China's northern dust storms and industrial pollution from China's coastal industrial region on Taiwan's air quality. Cross-strait cooperation is hoped to form a viable mechanism to effectively address and resolve air pollution concerns.

News Brief

Fines for Batteries Without Labels Indicating Mercury Content

From 2 September 2009, all marketed manganese-zinc and non-button alkaline manganese dry cell batteries as well as products that use Class II batteries, regardless of when they went on market, should all indicate “mercury content of batteries in this product conform to EPA standards” as well as a verification number. If environmental agencies find violations of this

regulation, those responsible for labeling, manufacture or import will be fined NT\$60,000 to NT\$300,000. Those responsible for selling incorrectly labeled products will be fined from NT\$1,200 to NT\$6,000. The EPA calls on all manufacturers, importers and vendors to check inventory of all products on store shelves and in stock to make sure they are correctly labeled as soon as possible in order to avoid fines.

Activities

US Experts Share Cap and Trade Experience

EPA Minister Shen met with a delegation of five including Mr. Reynaldo Forte of the USEPA on 3 August 2009 and presided over a discussion with greenhouse gas reduction management experts from Taiwan and the US. The US side introduced reduction plans currently promoted in the US as well as long-term promotion of voluntary climate partnership plans. This plan encourages the public and private sectors to increase energy efficiency and invest in cost-effective technology. Taiwan introduced its policy in response to climate change and the background behind the *Greenhouse Gas Reduction Act* (溫室氣體減量法). Both sides exchanged views on climate and energy issues.

The Taiwan EPA stated that the delegation to Taiwan has rich experience in long-term working applications of air pollutant controls and cap and trade mechanisms in America. Delegate members are also currently assisting the US government in planning greenhouse gas total cap and trade mechanisms. After the discussion, the Taiwan EPA held the "US trading mechanism design forum" in Taipei on 4 August 2009. Sharing and exchange of professional experience with USEPA experts will help domestic industry, government and scholars better understand related issues.

Collection of Used Computers for Charity Underway until End of November

This year the EPA is continuing promotion of plans to recover and donate second-hand computers and expects 350 computers will be transferred to remote areas by the end of November. All are welcome to donate computer equipment by first calling the donation hotline at 0800-212688 during this period. The EPA states that after recovered computers are refurbished, tested and installed with software, they can be sent to students of low-income families in remote areas. This is the continuation of a plan that has been ongoing for the past four years.

The standards have been raised for accepting computer donations. The EPA is looking to collect computers with Pentium 4 or higher processors, color screens 15 inches or larger, motherboards, keyboards, mice, speakers and other computer equipment. Anyone with over 20 old computers or equipment conforming to these standards can directly call the donation hotline (0800-212688) or

visit the "2009 Used Computer Recovery and Donation Plan" Web site.



▶ 2009 Photography Contest First Place Winner

2009 Photography Contest Shows Beauty of Riverine Wetlands

The EPA held a photography contest this year for the first time to make more people aware of the high quality of Taiwan's river environments since implementation of water purification facilities. People were invited to capture interaction between the environments, culture, animals, and plants at artificial wetlands. The EPA received 1,851 contest entries from 20 May 2009 to 10 July 2009, from which 30 of the best were chosen, including one first place winner, five outstanding entries and 24 excellent entries.

The EPA indicated that the photos entered in this contest show the results of all the hard work done to clean up our rivers and use natural principles to reach water quality purification goals. The pictures also show rich ecosystems of riverways, their educational value, and benefits of protecting the environment. For example, the winning photo shows how the Minghua constructed wetland originally was a neglected graveyard along the Sandie River. Chiayi County Government plans to remediate household wastewater in Sandie River transformed this area into the Minghua Wetland, which has since become an excellent destination for sightseeing, recreation and ecological education.

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