



Environmental Policy Monthly

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

Feature Column

New Biotech Applications in Environmental Protection

The EPA has had outstanding performance in applying biotechnology to pollution site remediation and environmental sampling and analysis in recent years. Taiwan's performance and development of biochips, rapid dioxin screening and testing for biological toxins attests to the nation's ability to stay abreast of environmental analysis.

Biototechnology has come to be known as the technology with the most widespread applications of the century. Biotechnology has extensive influence on many fields, especially in terms of its contributions toward applications in pollution site remediation and environmental sampling and analysis. In recent years, the EPA has yielded success in its research, development and adoption of three key biotechnologies for the detection of fungi spores in indoor air, dioxin in various media, and biotoxins in river sediment. The following article details these three biotechnologies.

Biochip Analysis of Harmful Fungi: Rapid, Accurate, Inexpensive

Pathogenic fungi often infect human respiratory

systems, skin or whole bodies, sometimes even leading to death. More attention is gradually being given to the health threats of fungal diseases. Special focus has been placed on four kinds of dangerous fungi, which the American Industrial Health Association (AIHA) recommends should be absent from indoor air: *Aspergillus versicolor*, *Aspergillus fumigatus*, *Aspergillus flavus*, and *Stachybotrys chartarum* (see figure).

According to the Indoor Air Quality Recommended Values announced by the EPA, the recommended value for fungal spores is under 1,000 CFU/m³ indoors. This represents the number of fungal spores in one cubic meter of indoor air. The higher the spore count, the greater the risk of becoming infected.

To accurately describe the extent of harmful fungal

In This Issue

| | |
|---|----|
| Feature Column: New Biotech Applications in Environmental Protection | 1 |
| Public Toilet Grading System Launched | 4 |
| Disease Vector Control Industry Management Regulations Revised | 5 |
| Indoor Noise Controls Tightened..... | 6 |
| EIA Review Observer Guidelines to Enhance Public Participation | 6 |
| Battery Manufacture, Import and Sale Restrictions Revised..... | 7 |
| Maintaining River Base Flow to Sustain Ecological Functions..... | 8 |
| NT\$300 Reward Offered for Reporting "Squids"..... | 9 |
| 2007 Government Green Procurement Performance Evaluation Announced..... | 9 |
| Energy Conservation and Carbon Reduction Courses for Over 1000 Instructors..... | 10 |
| Environmental Law Enforcement Agencies Team Up to Fight Crime..... | 11 |
| Briefs..... | 12 |

spores in indoor air, and to confirm whether indoor areas are harmful environments or not, it is first necessary to determine which species of fungi are present. Traditional analysis entails cultivation of fungi or analyzing dyed specimen under a microscope to determine the species. This method relies on the subjective judgment of analysts to determine the possible fungal species. Due to the wide range of changes in fungi characteristics, this identification method is often subject to human error. Moreover, this analysis method often requires two to three weeks.

Biochips can be used to confirm fungi species through genetic analysis. This method utilizes the precise analytical methods of molecular biotechnology. Each fungi has unique genetic fragments that are different from other fungal species, and the detection of these unique fragments can verify the occurrence of a particular fungi. Many different probes can be placed on one biochip. As each probe is capable of detecting the unique genetic fragments of one particular species of fungi, one chip can simultaneously screen out several species.

Lacking a market for biochips made for environmental analysis of fungi, the EPA has independently developed a rapid and accurate chip for detecting harmful fungi. The EPA and National Cheng Kung University's Department of Medical Technology

cooperated on preliminary research and development of a biochip that can simultaneously detect eleven kinds of common airborne pathogenic fungi. The use of this chip shortens analysis time by two-thirds compared to traditional methods.

Rapid Screening of Dioxin for a Safer Environment

Testing for dioxin involves extremely difficult microanalysis technology. High resolution gas chromatography - mass spectrometry (HRGC/MS) has traditionally been used. While this is accurate, it comes at a high cost and takes a long time. Moreover, highly concentrated samples are subject to contamination in laboratory environments during microanalysis. This factor greatly decreases the lifetime of HRGC/MS equipment.

Replacing this older technology with biological rapid analysis technology helps analysts detect a large number of samples in a short time at a lower cost. In recent years many advanced nations have adopted rapid dioxin screening methods. The EPA has successively introduced two types of rapid dioxin biological screening technologies from Holland (DR-Calux® cell screening) and the US (Procept® bioanalysis screening).

 *Chart: Comparison of dioxin biological rapid screening methods*

| | DR-CALUX® | Procept® |
|---------------------------------|-----------------------------|----------------------------------|
| Certification | EU certified | US EPA certified in 2007 |
| Cost of establishing technology | Over NT\$6 million | Under NT\$3 million |
| Testing time | About 7 days | About 5 days |
| Cost of analysis | About NT\$9,000 per sample | About NT\$5,000 per sample |
| Analysis capacity | About 120 samples per month | About 200 samples per month |
| Personnel training time | Over 3 weeks | 1 week |
| Sensitivity | High | Average |
| Suitable sampling media | All media | Soil, benthic substrate, fly ash |

In 2004, the EPA organized the transfer of rapid biological dioxin screening technology to Taiwan through the Dutch company BDS with a cell screening product called DR-Calux®. To ensure the feasibility of this method in detecting dioxin concentrations in various media including soil, food products, blood samples, and stock feed, the EPA use DR-Calux® cell screening method in onsite applications to detect various media at sites known to have dioxin contamination. The media included biological samples (fish, birds, eggs, feed, crustaceans, and plants), soil, benthic substrate, fly ash, and stack emissions. The results of this method showed a high degree of correlation with results of the traditional HRGC/MS method.

In addition, this method can analyze samples in three to seven days, effectively shortening analysis time. The advantages of this method show its worth as an accurate, simple, time and cost effective analysis method.

The Procept® Rapid Dioxin Assay is one of the newest available dioxin screening technologies. The verified results of experiments on soil and benthic substrate samples were reported in January 2007 by the US EPA. In December of the same year, the US EPA had already announced related standard methods: SW-846 Method 4430. The highlight of this method is its adoption of real-time polymerase chain reaction to analyze samples.

The EPA first confirmed whether this method is suitable for dioxin screening in various environmental media, and optimized the extraction and sterilization process. Analysis of fly ash, benthic substrate and biological samples was compared with HRGC/MS analysis results. Preliminary findings showed a high degree of correlation with conventional chemical methods. The analysis period had been shortened to only five days. One testing session could produce standard samples, quality control samples and 38 analysis samples, making this method suitable for screening large quantities of samples.

Testing for Biological Toxins in Sediment Aids River Pollution Control Assessment

In past years, surveys and pollution assessments of river water bodies have focused on testing water quality pollution parameters. This conventional assessment method is limited to narrow range of

physical and chemical properties of river surface water and does not provide an in-depth understanding of water flow downstream or overall quality of sediment and river mouth water quality. Moreover, this method does not provide an assessment of harmful water biota and human health risks. It also does not provide an in-depth survey of inorganic heavy metals, persistent organic pollutants or newly emerging pollutants. These factors show this method is unable to confirm the extent of pollution in rivers.

Pollutants in rivers settle, flocculate and accumulate in sediment at the bottom of rivers only to surface again after dissolving or washing away, becoming released once again into water bodies. Such re-emerging pollutants are now recognized as a common source of river pollution. Moreover, the benthic substrate of rivers is an important habitat for bottom-dwelling biota. After conducting physical and chemical parameters analysis and biological toxin testing, the harmfulness of river pollution can be assessed in terms of risks for river life and human health.

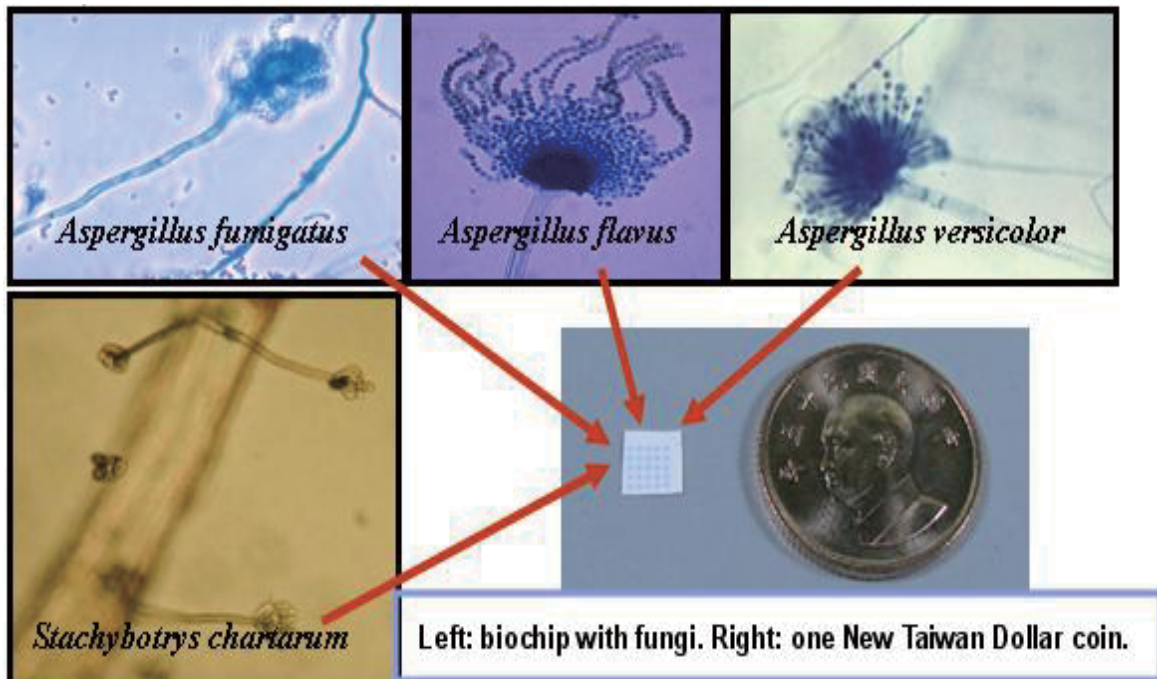
The US and other countries have long employed biological toxin testing of benthic substrate to assess the potency of toxins in sediment after many years. The EPA established the nation's first water flow benthic substrate toxic testing equipment in 2007. The USGS Sediment Testing Intermittent Renewal (STIR) system was then adopted in 2008 to conduct river flow sediment toxicity testing. Several species have been selected to carry out tests and find suitable specimen for testing in Taiwan.

Test results show that apart from setting benthic substrate quality standards, river ecology risk assessment parameters and a reference for assessing the effectiveness of river remediation results, future applications may include assessing factory flow discharge to prevent pollutants from being discharged into rivers.

As for future planning and development in the field of biotechnology, the EPA indicates biochip research and development currently awaits refinement in order to expand the application levels and enhance effectiveness. Although research and development of highly accurate probes usually requires several months, biochip testing offers advantages in terms of speed, accuracy, and simplicity. Apart from research

and development of new probes for disease-causing fungi, the field lies open to further research and development of testing chips with various applications

for pathogenic bacteria in different environmental media including air, water, and common pathogens.



▶ Figure: These four species of microscopic fungi can be detected using just one tiny chip

Environmental Sanitation

Public Toilet Grading System Launched

The EPA began implementing the Taiwan Public Toilet Cleanliness Enhancement Plan in the latter half of 2008. The plan calls for a system of evaluating and grading the cleanliness of public toilets. The plan is hoped to promote better care of public toilets by management organizations and foster a new culture of public toilet use among the public at large.

The EPA indicated that from the latter half of 2008, priority will first be given to evaluating and grading public toilets under jurisdiction of local municipal authorities, including those in designated scenic areas, along access roads and at rest areas. In 2009, inspections and grading will be extended to all public toilets. Grading will be based on the results of the initial inspection. There will be four grades: "Excellent", "good", "satisfactory", and "unsatisfactory."

Initial inspection scores of over 95 points will result in a grade of "excellent", 86-94 points will result in a grade of "good", 76-85 points will result in a grade of "satisfactory", and 75 points and under will result in a grade of "unsatisfactory." A sticker indicating the grade achieved will be displayed on each public toilet facility. The frequency of further inspections will be

dictated by the grading system; public toilets that are "unsatisfactory" will be inspected more frequently to ensure standards are improving.

The EPA has indicated that the overall promotion of this plan incorporates plans by each of the counties and municipalities to improve public toilets in their administrative areas. Mayors and commissioners of each municipality and county will join forces with local leaders at the village, township, and city level to signal their intent to maintain the cleanliness of public toilet facilities. Together they will promote public awareness of the plan and guide and administer the work teams that will clean the toilets. On 11 July 2008, the EPA invited staff from county and municipality environmental protection bureaus to attend a workshop. These bureaus will issue

handbooks to cleaning teams detailing methods for effectively cleaning public toilets and the criteria by which cleanliness will be evaluated by inspectors. The bureaus will themselves hold workshops for their local cleaning teams. Each bureau will list all public toilets in their administrative areas and carry out evaluations and grading to ensure cleanliness standards continually improve.

The EPA points out that the new system of maintenance and inspections will mean that every single public toilet will be maintained by trained employees. In addition to holding management organizations responsible for inspections and evaluations, the EPA will also actively seek the cooperation of volunteers in all residential areas from village to city to inspect public toilets. It is hoped that establishing channels of communication to facilitate

feedback from users of the facilities to cleaning staff, supervisors, and administrators will add impetus to the task of maintaining high standards of cleanliness in public toilets.

The EPA has also indicated that this new system will also be employed to maintain cleanliness and high standards of hygiene in villages and townships around the island in the future. To this end, numbered routes will be established to facilitate inspection patrols. The EPA will continue to seek the cooperation of volunteers in non-urban areas with regards to informal inspections of public toilet facilities. Inspection results will be posted online to encourage positive dialogue between members of the public and government officials with the aim of improving standards of cleanliness and hygiene in the everyday environment.



▶ Figure: Taipei City Public Toilet Grading Sticker

Toxic Substance Management

Disease Vector Control Industry Management Regulations Revised

The EPA has promulgated revisions to the Disease Vector Control Industry Management Regulations on 24 July 2008 in accordance with Article 22 of the Environmental Agent Management Regulations. The revisions enhance the professional capacity and overall image of Taiwan's disease vector control industry, as well as strengthen the professional skills and safety of personnel handling environmental agents.

To enhance the professional skills of personnel handling environmental agents, the EPA has revised regulations to clarify that the disease vector control industry must conduct substance handling training before personnel are dispatched to handle

environmental agents. Refresher training is required every three years of employment. To encourage environmental agent handlers to proactively obtain professional technician certification, the revisions specify that disease vector control technicians are

automatically qualified to act as disease vector control environmental agent handlers without undergoing further training. To supervise whether industries are adhering to regulations, a training plan is required of organizations, which must obtain a permit according to disease vector control industry permit license application procedures. Environmental agent handler training should be recorded and a follow-up check should be made within one month.

To additionally raise the overall image of the disease vector control industry, it has been specified that those applying environmental agents should wear conspicuous uniforms or vests with the company number and profession. It is also specified that onsite application of agents should be appropriately demarcated by a yellow ribbon and signs. Vehicles

used by disease vector control enterprises should show the company number and other important information to distinguish it as disease vector control industry vehicle. This measure will make monitoring work easier for government workers and citizens. To enhance the efficiency of government management, disease vector enterprises should also keep up with digitization trends and submit annual reports of operations over the Internet.

Enterprises that have already obtained their license before revisions take effect should have their personnel training plans verified by their local competent authority before 30 June 2009, as well as complete personnel training and follow-up check of training records.

Noise Control

Indoor Noise Controls Tightened

On 24 July 2008, the EPA issued a preannouncement of the draft Restriction on Disruptive Activities in Living Environments. The bill stipulates the places and times that noise restrictions will be enforced. Restrictions will cover two main categories of behaviors that disturb the peace: “indoor construction work” and “using amplifiers and speakers for singing in premises not licensed for entertainment.”

The EPA points out that cases of “indoor construction work” and “the use of amplifiers and speakers for singing in premises not licensed for entertainment” usually occur in residential areas, where noise pollution has a substantial impact on the quality of life of nearby residents. In order to effectively control such sources of noise pollution and ensure that all citizens are able to enjoy peace and quiet during their time at home, coordinated announcements will be made to inform the public of the ban on disturbing the peace during nighttime hours and on weekends and national holidays in accordance with Article 6 of the Noise Control Act.

The EPA has indicated that the ban on indoor construction work and amplified singing will be enforced during evenings and certain hours of the day. It is expected that this revision of the law will be effective in curbing noise pollution in residential areas and will thus reduce the number of formal complaints received from the public.

More information on this preannouncement can be downloaded from the EPA website at <http://atftp.epa.gov.tw/announce/index.htm>

EIA

EIA Review Observer Guidelines to Enhance Public Participation

On 30 July 2008, the EPA held a public meeting to hear opinions and suggestions that could lead to improvements on the forthcoming draft of the Guidelines Concerning Observers at Environmental Impact Assessment Review Meetings (draft) [環境影響評估審查旁聽要點(草案)].

In order to encourage public participation in assessment and investigation of cases that involve environmental impacts, the EPA has drawn up the Guidelines to assist groups such as NGOs, residents and their representatives, and reporters when attending assessment and investigation meetings. These meetings include preliminary hearings and committee meetings.

The Guidelines stipulate that all meetings are open to the public in principle, except in the following circumstances:

(1) When development related businesses have asked for a closed meeting so that confidential information regarding their operations is not publicly disclosed.

(2) When the conveners of the meeting decide that the meeting should be closed.

Groups and communities that wish to send representatives to a meeting must apply to the EPA in advance; each group will be limited to two representatives.

The EPA will be responsible for providing a room

from which observers can listen to the meeting's proceedings. Observers who wish to join the meeting in order to express opinions should make this clear when they initially apply to the EPA to attend the meeting.

A maximum of 30 minutes per case will be allocated to observers to express opinions and each observer who wishes to express their opinion will be allotted three minutes to do so. Observers who do not get the opportunity to voice their opinions at the meeting may do so in writing.

The chairperson for the meeting must gain consent from all of the committee members present to allow the observers to remain to hear the final decision on the case; otherwise all observers must leave the meeting rooms.

The EPA will open the meeting rooms for a set period of time before the meeting to allow representatives of the media in to film and prepare broadcasts.

In order for the meeting to be conducted in an orderly fashion, the Guidelines specify relevant rules each of the groups (NGOs, residents or their representatives, media) needs to observe when attending the meeting.

Recycling

Battery Manufacture, Import and Sale Restrictions Revised

The EPA has announced revisions to Article 6 of the Restrictions on the Manufacture, Import and Sale of Dry Cell Batteries. Revisions stipulate that when manufacturers and importers of disposable manganese-zinc batteries or non-button alkaline manganese batteries apply for document verification with the EPA, the company need only submit basic information on company registration, business registration or other authorized documents to verify their establishment.

According to the Restrictions on the Manufacture, Import and Sale of Dry Cell Batteries (限制乾電池製造、輸入及販賣), from 1 September 2006, all manufacturers and importers of disposable manganese-zinc batteries and non-button alkaline manganese batteries have been required to first submit test reports to verify batteries contain less than 5ppm mercury before they engage in manufacture or import activities. Manufacture and import may commence only after obtaining verification documents from the EPA. By the end of 30 June 2008, already

1,350 documents had been issued to verify mercury amounts accord with the restriction. The rate of violations discovered by local environmental protection bureaus during inspections has gradually decreased, showing that this policy has steered a trend toward the design of low-mercury dry cell batteries.

The EPA has undertaken this revision to complement the Ministry of Economic Affairs' revisions to the Business Registration Act on 16 January 2008, which have canceled the former for-profit

business registration issuance system. In the future, corporations and other businesses are not required to register as for-profit businesses, and need only complete company registration or commercial registration. The EPA has responded by revising Article 6 of the original Restrictions on the Manufacture, Import and Sale of Dry Cell Batteries. Previously manufacturers and importers applying

for verification documents were required to submit a "certified copy of company registration or for-profit business registration." This has been revised to require "company registration, commercial registration, or other documents issued by competent authorities to verify establishment." This change makes it easier for businesses to apply for verification documents.

Water Quality

Maintaining River Base Flow to Sustain Ecological Functions

The EPA is conducting studies on the base flow of rivers to effectively maintain and improve river ecology. The results will serve as a reference for environmental impact assessments concerning river flow and river remediation.

River flow in Taiwan has a wide range of variance, at times very high and other times low and dry. This is further complicated by dams or barriers in upstream and midstream locations. During drought periods, downstream flow is exhausted, greatly affecting the original shape of the river as well as fish habitat. These changes can seriously impair river ecosystems and can be seen as a result of inadequate consideration toward the normal flow of rivers (commonly referred to as "base flow").

The EPA states that the National Council for Sustainable Development, Executive Yuan, in its Sustainable Development Action Plan asks competent authorities responsible for allocating water rights to consider the environmental base flow of each river segment. Moreover, according to Article 38 of the Development Environmental Impact Assessment Working Guidelines, developers must first assess base flow for construction of weirs, dams, hydropower, or drawing off water. When developing water resources, the maintenance of river base flow must be assessed in order to maintain river ecology. Both water quality and quantity are equally important in efforts to improve river ecology. The EPA states that sharp reductions of pollution discharge have already improved water quality. Now the EPA is carrying out investigative studies on base flow to serve as a reference for environmental impact assessments of river flow and river remediation.

River base flow can be analyzed and assessed for impact on fish habitat via historical methods,

experiential methods, hydrological methods, and habitat methods. The EPA uses these methods to analyze the base flow of four rivers: the Hsindian River in northern Taiwan, the Zhuoshui River in central Taiwan, the Kaoping River in southern Taiwan and the Beinan River in eastern Taiwan. On 18 June 2008, the EPA invited organizations and experts in the fields of water resources, fisheries, water quality protection and natural ecology to conduct a study on the characteristics of base flow of rivers in Taiwan and examine principles for determining river base flow. Preliminary suggestions included ensuring ecological functions of base flow, only considering rivers with artificial constructions such as river weirs or dams. Natural streams were not included in the discussion. It was also recommended that the minimum values of either 3 CMS or daily flow duration of Q97 be adopted as base flow. In future river remediation projects, the EPA recommends that the above principles are followed to maintain river base flow.

Currently, lenient regulations on water rights are causing insufficient river base flow. While waiting for water agencies to adjust water rights, the EPA will widely encourage the establishment of water conservation agreements with enterprises so that the saved water can replenish base flow and increase river base flow to meet ecological needs.

For more information please call 02-2311772 ext. 2810

Air Quality

NT\$300 Reward Offered for Reporting “Squids”

The EPA promulgated revisions to the In-Use Motor Vehicle Air Pollutant Report and Reward Regulations (使用中汽車排放空氣污染物檢舉及獎勵辦法) on 23 June 2008 to increase people's motivation and willingness to report polluting vehicles (locally referred to as “squids” for their trail of black smoke), and to provide a substantial reward for informers. The Regulations have been changed to authorize local competent authorities to appraise reports and rewards. From 1 January 2009, NT\$300 will be allocated for each case reported in accordance to the rules.

Currently, EPA methods to encourage citizens to report vehicles suspected of polluting include seasonal awarding of medals, prizes, certificates of merit, banners, and plaques. Environmental agencies were responsible for looking into reported cases and verifying suspected polluting vehicles. A gift or souvenir worth up to NT\$50 was offered as a reward. Those who had reported polluting vehicles frequently conveyed that this compensation was insufficient or impractical.

A more substantial reward is now offered to encourage informants to include a photograph in their reports. The revision authorizes the local competent authority to decide whether the reported photo can convincingly

show that the suspected vehicle is polluting the air. If such a photo can be produced, regulations provide for a reward of NT\$300. For tax purposes, reporters that receive this reward are required to leave their ID number with the environmental agency.

The new regulation will take effect on 1 January 2009 to provide adequate time for allocating the budget to support this policy. To prevent people from making false reports and causing problems or unnecessary disputes for reported citizens or authorities checking into cases, it has been added that polluting vehicles must be reported within 30 days of discovery. For more information, please call 02-2311-7722 ext. 2786.

Ecolabeling

2007 Government Green Procurement Performance Evaluation Announced

The EPA has announced the results of government green procurement in 2007. Over NT\$6.77 billion has been invested in environmental products, showing an increase of NT\$123 million over the year 2006.

According to the EPA's performance evaluation report, government green procurement in 2007 accounted for over 90% of spending in designated green procurement product areas. The top three performing agencies in the central government were the Central Bank of Taiwan, the Coast Guard Administration, and the Central Personnel Administration. The top three performing agencies at the local government level were Taipei City, Hsinchu County and Chiayi City. The Coast Guard Administration was commended for keeping strict control over procurement affairs to ensure compliance with green procurement requirements and for conducting follow-up checks on green procurement affairs. Taipei City and Hsinchu County governments required each department to reach 90%

green procurement in designated product areas. The evaluation committee gave resounding approval of these two governments' efforts to integrate resources and greatly increase green procurement rates in agencies and schools. Taipei City was especially commended for reaching a 99% green procurement rate in designated product areas.

The government green procurement performance evaluation in 2007 was carried out by a committee commissioned by the EPA. The evaluation included three parts: designated category procurement rates, non-designated category environmental product procurement, and overall performance in green procurement (including administration, promotion and practice).

The EPA pointed out one of the highlights of green procurement in 2007 was the adoption of an online reporting system to report green procurement results. Each agency uses this system to enter the procurement data of their joint supply contracts with the Public Construction Commission. This works to raise green procurement reporting and can be provided to analyze environmental product procurement sums. Statistics show that out of 35 designated green procurement product categories, office equipment account for the largest sum of all green procurement at 68.5%. Computers account for the second largest sum of all green procurement at 14.4%. Other office supplies and paper account

for 13.9% and other categories account for 3.2%. Computer mainframes, household air conditioners, office automation systems and dual-flush toilets are the products on which most green procurement money is spent.

The EPA indicates that in order to strengthen promotion of government green procurement plans, from the second half of 2008, the online reporting system for green procurement results has added features to include monthly confirmation and follow-up tracking of procurement information to keep continual command over each agency's performance in green procurement.

Climate Change

Energy Conservation and Carbon Reduction Courses for Over 1000 Instructors

On 30 July 2008, ToI (training of Instructors) classes in energy conservation and carbon reduction began at the EPA Professionals Training Institute for over 70 trainees recommended by county and municipality environmental protection bureaus. The course is part of the "Public Action Plan for Implementing the Energy Conservation and Carbon Reduction No Regrets Policy Instructor Training Program."

EPA Minister Stephen S.H. Shen offered words of encouragement upon meeting with the future Instructors. It is hoped that, combined with a mobilization of government staff and concerned citizens, they will be able to effectively promote energy conservation and carbon reduction policies (such as the purchasing of "green" products) in government departments, large organizations and in everyday life. The ultimate goal is to change consumer habits and deeply ingrain the concepts of energy conservation and carbon reduction in people's minds in order to stimulate the evolution of a low-carbon, eco-friendly society.

Minister Shen stresses that the themes of the training program are in full accord with the EPA's administration of policies, which are centered on the four main strategies of "Energy conservation and carbon reduction to cool the Earth," "Resource recycling for zero waste," "Pollution elimination for ecological conservation," and "Keeping a clean neighborhood with lifestyles of health and sustainability." He also hopes that by combining the four main strategies with the 5S program, a sustainable, healthier way of life can be brought about. The 5Ss refer to seiri, seiton, seiso, seiketsu,

and shitsuke, which are Japanese for "tidying up", "reorganizing", "sweeping", "cleaning" and "cultivating good habits."

The plan calls for the training of over 1,000 Instructors from central and local government departments before the end of 2008. A total of over 4,300 Instructors chosen from enterprises, environmental groups, volunteer groups and the general public will eventually be inducted into the program. By educating others and implementing policies in accordance with the "Public Action Plan for Implementing the Energy Conservation and Carbon Reduction No Regrets Policy," these Instructors will lay the foundations on which government personnel, volunteers, the general public and 14,000 "front line" village and borough chiefs and local officials can build upon.

The goal is to disseminate the concepts of energy conservation and carbon reduction as quickly and thoroughly as possible so that they spread to every corner of every community and household. By working together all citizens will be able to enjoy the benefits of a clean and eco-friendly environment.

Environmental Law Enforcement Agencies Team Up to Fight Crime

Citizen reported illegal landfilling of waste in Jhugang Village, Chigu Township, Tainan County last year. The EPA's Southern Bureau of Environmental Inspection recently assisted the Tainan District Prosecutors Office, the Tainan County Environmental Protection Bureau and the Environmental Police Force to uncover the site. A large quantity of industrial waste was uncovered and samples were sent in for examination.

Investigations revealed the landowner of this hectare of land had used the land for raising pigs and fish. Upon violating land use zoning regulations, the landowner was ordered to remove the pig farm. In February this year (2008), the landowner sold about a third of a hectare to an agricultural product wholesaler in Changhua County. In April, as the company began preparing to build a warehouse for its products it unearthed a small quantity of waste. Neighbors reported this occurrence to environmental authorities, who together with environmental police kept control over the site and successfully discovered the identities of people suspected of burying the waste.

Just days ago, the EPA's Southern Branch Bureau of Environmental Inspection assisted Tainan district prosecutors, Tainan County Environmental Protection Bureau and the Environmental Police Force in using two excavators to dig 11 pits. A large quantity of industrial waste was found including plastic and other industrial waste. Samples of leachate and waste were taken from the pits and sent to labs for examination to determine the concentration of pollutants. The prosecutor brought the suspects to the site to record further evidence. After the investigation, the pits were filled and environmental police cordoned off the area to prevent further danger.

Remote coastal townships in Tainan County including Jiangjun, Chigu, and Sigang have been connected by an access route in recent years. Now Highway 61 transects this coastal area, not only making transportation convenient but also making the area a favorite dumping ground for unscrupulous

waste clearance companies seeking profit. Such practices have seriously damaged the ecosystem and environmental quality of this area.

Working to fight environmental crime and intimidate dodgy enterprisers, the EPA's Southern Branch Bureau of Environmental Inspection is assisting the Tainan County Environmental Protection Bureau and the Environmental Police Force with nighttime roadside inspections along roads or at sites prone to illegal dumping. Points likely to attract illegal dumping have also been assessed and placed under regulatory control subject to nonscheduled patrols by the Environmental Police Force and all levels of environmental agencies.

The EPA emphasizes the current focus of inspection work is to prevent environmental damage by clamping down on illegal waste clearance and disposal organizations. Enterprisers engaging in waste clearance without a clearance or treatment permit are subject to fines ranging from NT\$60,000 to NT\$300,000 according to Article 41 of the Waste Disposal Act (廢棄物清理法), or a jail sentence ranging from one to five years according to Article 46 of the Act.

The EPA states that citizen cooperation is necessary to effectively put an end to illegal dumping. People who discover their neighborhoods with suspicious vehicles or people transporting or dumping waste are asked to immediately call environmental authorities or police. The environmental report toll-free hotline is 0800-066666.

Briefs

Nine Counties/Cities Awarded for Outstanding Recycling Performance

The results of a performance evaluation of recycling work by implementing agencies in 2007 has been released to motivate higher quality work. Preliminary evaluations were conducted by local environmental protection bureaus (EPBs)

and the EPA conducted follow-up evaluations. Nine county and city EPBs were awarded for outstanding performance in an awarding ceremony held on 9 July 2008. Statistics show the national overall recycling rate has increased from 15.6% in 2002 to 30.51% in 2007. In 2008, the EPA will continue to promote the reuse and recycling of products and materials.

EPA Holds Voluntary Carbon Reduction Forum

The EPA invited VCS Association CEO and secretary-general of IETA, Mr. Edwin Aalders, to Taiwan to give a presentation on international voluntary emission reduction operation mechanism, to help domestic industry, government and academia better understand the issue. Drawing on his experience with implementing VCS 2007, Mr. Aalders introduced VCS projects and related operating rules and procedures including the VCS Board, validation specialists, verification specialists, planning specialists, VCU purchasers, traders, and rules for interactions between registration offices.

The International Emissions Trading Association (IETA), The Climate Group (TCG), and the World Business Council for Sustainable Development (WBCSD) announced the Voluntary Carbon Standard (VCS 2007) last year. This was done to ensure Voluntary Carbon Unit (VCU) independent verification complies with standards for substantial, quantifiable, incremental and perpetual emission reductions.

River Remediation via Gravel Bed Oxygenation

The EPA has subsidized the Taipei City government to install gravel beds within the Chengmei Creek for enhanced oxygenation. This is now the largest domestic gravel bed remediation site with most infrastructure already completed and currently under trial operation. The EPA indicates gravel bed oxygenation is one method of river pollution remediation, which is able to sharply reduce the pollution entering rivers prior to construction of a sewer system. Advantages of this method include stable functioning and reduced river pollution due to the provision of adequate dissolved oxygen for removing ammonium nitrogen via oxidization.

The EPA held an event on 24 July 2008 at the Chengmei Creek gravel bed oxygenation site and Dongnan University to enhance the implementation of river pollution remediation and upgrade river pollution remediation technology. Invited to this event included the nation's environmental and water resource organizations, environmental engineers, engineer associations and related engineering technical consulting companies to discuss the planning, design, construction, supervision, and treatment of gravel bed oxygenation technology. The event also included a visit to the site. For more information, please call 02-2311-7722 ext. 2361.



 Chengmei Creek gravel bed oxygenation site

Environmental Policy Monthly
R.O.C. (Taiwan)

Publisher
Stephen Shu-hung Shen, Minister

Editor-in-Chief
Y. F. Liang

Executive Editors
Yu-ling Yang; Hui-kuo Consulting Co., Ltd.

**Editorial and translation support
provided by:**

Hui-kuo Consulting, Ltd.,
The EPM is available on the EPA web-
site at [http://english.epa.gov.tw/en/
FileDownloadPage_EN.aspx?path=420](http://english.epa.gov.tw/en/FileDownloadPage_EN.aspx?path=420)

For inquiries or subscriptions to the
printed version, please contact:

Environmental Policy Monthly
Environmental Protection Administration
International Affairs Office

83, Sec. 1, Jhonghua Rd.,
Taipei 100, R.O.C. (Taiwan)
tel: 886-2-2311-7722, ext. 2211
fax: 886-2-2311-5486
e-mail: umail@epa.gov.tw

ISSN: 1811-4008
GPN: 2008600068
Contents Copyright 2008.
printed on recycled paper

