



# Environmental Policy Monthly

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## Feature Article

### Environmental Big Data Applications in Taiwan

Since 2010, the EPA has been building an environmental data exchange platform that integrates data from multiple government ministries and agencies to meet the demands for environmental information. To expand the application of environmental data, the EPA has incorporated the concept of big data and also established cloud computing capacity, as well as creating a real-time app service. Related technologies will continue to be updated to allow for increasingly advanced analyses of environmental data and to create new value-added applications for it.

#### Start of the Plan

The purpose behind the Environmental Resources Database Integration Plan (or, the Environmental Cloud Plan) is to integrate data on the atmosphere, water, land, forests, and ecosystem from multiple ministries and government agencies in order to conduct internal analyses that are made available to government agencies, academic institutions, and the general public. This is part of a general drive to strengthen inter-ministerial exchanges and integration of data.

The structure of environmental data is generally complex, involving many different categories. However, combining large volumes of data is very beneficial for enhancing data mining, uncovering relationships between sets of data, supporting environmental policymaking, and strengthening data analysis technology.

The Environmental Cloud Plan originally began as the Environmental Resources Central Data Exchange (ERCDX or CDX), which was a unified platform for exchanges of environmental data. In 2010 and 2011 the EPA began interdepartmental exchanges of data on water quality monitoring and rainfall volumes. Since

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then the scope of environmental data exchanges has been continually expanded. Building on the CDX, the Environmental Resources Database was created, and with the introduction of cloud computing in 2013 the EPA established the Environmental Resources Database (ERDB) and the Environmental Open Data Platform. Both of these platforms continue to integrate data from the government agencies involved as well as providing data on land, disaster preparedness and response for the public, and value-added data for enterprises.

As shown in the diagram, the next step in the evolution of the EPA's Environmental Cloud Plan is the i-Environment network that aims to provide the public with data – real-time and historical – on their local and other environments so as to facilitate improved quality of life. The i-Environment will be an interactive system that encourages public participation and concern for the environment. For example, the information on listed pollution sources will be tailored to meet differing demands from the public. The system will also incorporate the concept and application of big data.

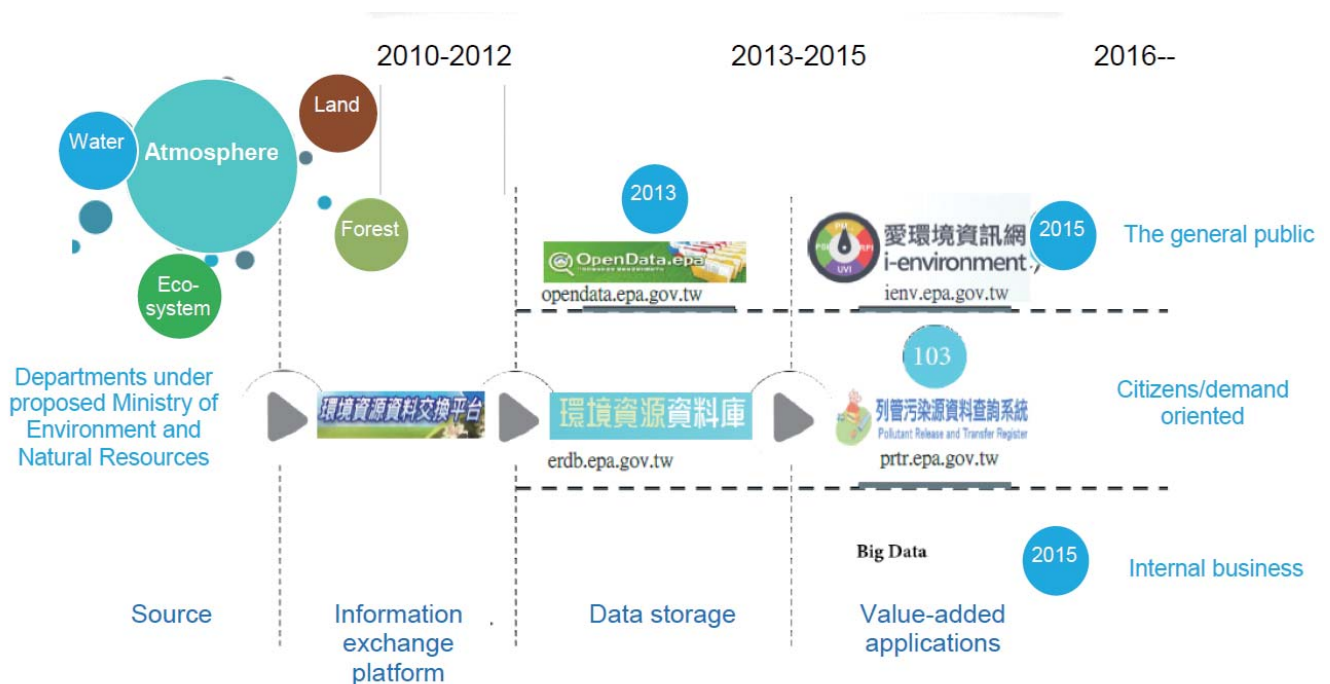
### Operation Process

The applications for big data are extremely wide-ranging. Taking a model website designed to incorporate big data and environmental governance

as an example, in terms of work flow and necessary resources, the model needs to include five main parts:

1. Collection: Combining data collected by central and local governments and expanding its depth and range. Such data would include automated monitoring data from effluent discharge outlets, smokestacks and air quality monitoring stations in special industrial parks, etc.
2. Storage: Digitizing the data for easier storage and facilitating machine-to-machine (M2M) reading of it.
3. Retrieval: Government agencies would be able to use CDX to share the stored data.
4. Analysis: Data analysis would continue to be advanced by technological improvement and capacity building.
5. Application: Providing data to aid decision-making and facilitating data-driven thinking.

In this operation process, the EPA has been conducting lateral data integration in terms of compilation and unification, performing case analysis, and using software for vertical analysis according to the differing needs of each government agency. The



▶ Evolution of the Environmental Cloud

EPA will continue to incorporate different categories of software – such as big data database platforms, statistics software and data visualization tools – for case analyses to provide suitable operational models.

## Achievements to Date

### 1. Establishing an Environmental Open Data Platform

As a part of the government's Open Data policy the EPA has disclosed information on 626 categories. The information has been viewed or downloaded at a rate of over 1.8 million hits per hour, and reused by more than 600,000 users. The platform successfully boosted information accessibility and the application of cloud computing to improve information services. Statistics show that from 2013 to October 2016 the information exchange system for central and local government agencies made available over seven million entries of information, in 2,000 categories.

### 2. An Advanced Real-time Environmental Information App

The EPA's free Real-time Environmental Information app is an example of open data in practice. Using dials and diagrams on their mobile device screens,

members of the public can browse real-time and historical monitoring data and forecasts. The app also provides air quality data and an active warning service. It has been downloaded over 230,000 times, and the monthly hits it receives exceeds 1 million, making it a handy daily

source of environmental information for users. The app's innovative level of service has also won the Geospatial World Excellence Awards-2016 for Breathe Easy & Live Better Environmental Info Push App, given by the Geospatial World Forum (GWF) in Rotterdam, Holland.

### 3. Innovative Service from the Environmental Cloud

The Environmental Cloud stores data on the atmosphere, water, forests, land, and other ecological data that has many value-added applications and greatly enhances Taiwan's environmental governance capabilities. The app also won an "outstanding" award in the government services category at the 2016 Cloud Computing and Internet of Things Innovation Awards held by the Cloud Computing Association in Taiwan. The app was praised for its innovative way of integrating and sharing multidisciplinary data.



▶ Screenshots of the EPA's Real-time Environmental Information App showing personalized environmental information

At the awards ceremony on 4 November 2016, the award was presented to the EPA by Taiwan's Vice President, Chen Chien-jen.

## Looking to the Future

By making big data available to the public and creating new value-added applications, the EPA will continue to strive toward the following in the future:

1. Internal and external information integration and application
2. Information disclosure and sharing
3. Encouraging innovations in operations, management and infrastructure models, and gradually expanding the scope of environmental big data applications

4. Establishing an environmental big data management mechanism and a standardized system

5. Improving accuracy, consistency, and veracity of information

6. Strengthening operations management and information security

The potential applications of big data in terms of the environment are both broad and deep. Big data could mean much more transparent information being disclosed to the public and will be even more important to the EPA for its internal policy and decision making. The EPA intends to make full use of big data technologies to conduct deep analyses of environmental data, and to continue creating value-added applications for it.

## Climate Change

### EPA Shifts Up a Gear as Paris Agreement Takes Effect

On 4 November 2016, the Paris Agreement entered into force. Taiwan has already been implementing some related measures, and the EPA will be shifting up a gear or two to ensure that Taiwan remains up to speed. In addition to completing the inventory of the first batch of greenhouse gas emission sources at the end of August 2016, and formulating or amending the relevant regulations, the EPA is also drawing up incentives for voluntary reduction. In addition, the EPA has asked all ministries to confirm their responsibilities in terms of greenhouse gas emissions reduction and climate change adaptation measures, and has begun working on a draft of the National Climate Change Action Framework.

Ahead of the Paris Agreement entering into force on 4 November 2016, and as part of the global effort to combat climate change, Taiwan promulgated the *Greenhouse Gas Reduction and Management Act* (溫室氣體減量及管理法) on 1 July 2015. The EPA has prioritized the inventory of industrial emissions. By the end of August 2016 the EPA had audited the first batch of 277 major emission sources and recorded their greenhouse gas emissions to establish the baseline of industrial emissions. The EPA has also formulated six related bylaws, one announcement, and three sets of administrative rules relating to auditing management and carbon offsets. The EPA will soon begin the task of combining the various incentives and subsidies offered by various ministries to formulate energy efficiency standards for emission sources as well as incentives for voluntary emission reduction, in order to further encourage enterprises to reduce greenhouse gas emissions.

On 24 June 2016, the Executive Yuan convened an inter-ministerial meeting at which the responsible ministries for the 17 greenhouse gas reduction and climate change adaptation tasks laid out in Article 8 Paragraph 2 of the *Greenhouse Gas Reduction and Management Act* were confirmed. Each ministry was also asked to submit its implementation proposals by the end of October 2016. At present, the EPA has collected almost 200 adaptation proposals put forward by related ministries and will submit them to the Executive Yuan for approval.

In addition, with regard to the regulatory scope of the *Greenhouse Gas Reduction and Management Act*, the EPA has examined the Paris Agreement and the 2030 Sustainable Development Goals set out by the United Nations to draw up a draft of the National Climate Change Adaptation Action Framework. The draft will later be published for public comment, and

once approved by the Executive Yuan the framework will serve as the guidelines for Taiwan's greenhouse gas reduction measures and the administration thereof.

In addition to stating Taiwan's long-term reduction targets and related adaptation mechanisms, the *Greenhouse Gas Reduction and Management Act* also requests 5-year phased control targets. The EPA is currently formulating short-term reduction targets and has established the Greenhouse Gas Phased Control Targets Advisory Committee to assist in formulating the *Greenhouse Gas Phased Control Targets and Operation Guidelines* (溫室氣體階段管制目標及管制方式作業準則). The draft of the regulations was put together after four meetings of the committee at which the details were discussed. The draft clearly stated the target and timeline for each phase, the factors to be considered, target

determination procedures and follow-up control measures. The regulations will be announced once all the required legislation procedures are completed.

Despite the fact that Taiwan is not a party to the United Nations Framework Convention on Climate Change (UNFCCC), it is doing its best to shoulder its responsibility as a member of the global community. Taiwan has implemented many concrete measures and carried out activities in response to UNFCCC calls to action. Taiwan will keep a close watch over developments in the Paris Agreement in order to formulate appropriate subsidiary laws and measures as well as to implement the tasks related to climate change response. Taiwan will keep improving its legal framework for climate change response and review its greenhouse reduction targets on a regular basis to create a low-carbon sustainable homeland.

## Waste

# Expanded Control Targets on Plastic Shopping Bags Preannounced

To encourage the reuse of plastic shopping bags, and thus reduce the volumes of single-use bags being thrown away, on 28 October 2016 the EPA preannounced an expansion of the list of businesses that are not permitted to offer free plastic shopping bags. Seven major new categories have been added, while bag thickness limits for the total 14 control categories that provide the bags have been lifted.

The EPA has been rolling out plastic shopping bag reduction measures since 2002. There are currently seven main categories for the measures, where consumers must pay for plastic shopping bags or provide their own shopping bags: government offices, public and private schools, department stores and shopping centers, wholesalers, supermarkets, convenience store chains, fast food chains. The seven new categories in the pre-announcement are pharmacies, medical equipment stores, electrical appliance stores, book and stationery stores, laundries, beverage retailers, and bakeries.

The new regime is expected to come into force on 1 January 2018, thus giving the affected enterprises plenty of time to make the necessary adjustments, such as notifying their customers. As for the topic of plastic shopping bag thickness – which has been of some public concern recently – the EPA has decided to scrap proposed limits on thickness aimed

at reducing the amount of plastic being used. The price of the bags will continue to be decided on the principle of reducing consumption through price mechanisms, and for the time being it will thus be left for each enterprise to decide what to charge. The EPA is also urging all enterprises that provide plastic shopping bags to put signs up in their premises or place labeling on their bags that encourage the reuse or proper recycling of the bags.

The EPA also intends to hold public hearings and discussion meetings to hear the opinions of all stakeholders, and suggests that enterprises that are members of business associations or are affiliated with unions to give their opinions through such organizations. Enterprises not belonging to business associations or other organizations can register their contact details on the EPA's Household Waste Management Service website to receive notification of public hearings.

## Taiwan and US EPAs Jointly Hold 2016 GEEP Conference in USA

In conjunction with the North American Association for Environmental Education (NAAEE), on 17 October 2016 the Taiwan and US EPAs held the Global Environmental Education Partnership (GEEP) 2016 Conference in Madison, Wisconsin. Four days later, on 21 October, a ceremony marking the start of the GEEP plan for North America was also held. A total of 39 governmental and non-governmental environmental education experts from 19 nations attended the conference to formulate a strategic plan to launch long-term promotion of and cooperation on environmental education.

At the conference, held by the Taiwan and US EPAs along with the NAAEE, a strategic plan for GEEP was discussed. The delegates also explored the best developmental projects for GEEP and watched a GEEP promotional film. The conference was a chance for delegates to enhance future efforts by reflecting upon the achievements of recent years and to review them from the perspectives of government policy, professional development, evaluation, and the best way of implementation.

The delegates came from 19 nations: Taiwan, Australia, Botswana, Brazil, Canada, Chile, Denmark, India, Indonesia, Japan, Mexico, Nepal, the Netherlands, the Philippines, Russia, South Korea, Uganda, the UK, and the US. They were also invited to attend the NAAEE's 45th annual conference. Both events offered delegates the opportunity to discuss relevant topics with academics, experts, and government officials involved with environmental education to get up to speed with current trends and knowledge in other nations.

In his speech at the GEEP conference, Tsung Yung Liu, Director of the EPA's Department of Comprehensive Planning, said that with the help of the US EPA and the NAAEE, the third year of the GEEP plan would see the initiation of GEEP environmental education platforms in North America, Kenya, India and the UK. He expressed hope that the ceremony would highlight the importance of environmental education and stimulate the participating nations to put more resources into advancing it.

GEEP is one of the most important International Environmental Partnership projects that the Taiwan and US EPAs are working on together. The aim is to create an open international platform that environmental education specialists can use to exchange ideas and learn from each other. GEEP is strengthening the environmental education partnership between Taiwan and the USA – and other similar partnerships around the world – through pragmatic cooperation.

## Taiwan-US Eco-Campus Partnership Celebrates Third Anniversary

On 14 October 2016 the Taiwan-USA Eco-Campus Partnership Program 3rd Anniversary Event took place at Rock Creek Forest Elementary School in Maryland, USA. An eco-campus delegation from Taiwan, and representatives of the US EPA and the US National Wildlife Federation (NWF) were among the attendees. Jane Nishida, Principal Deputy Assistant Administrator for the US EPA's Office of International and Tribal Affairs, Ambassador James Kuang-jang Lee, head of the Taipei Economic and Cultural Representative Office in the United States, and Tsung Yung Liu, Director of the EPA's Bureau of Comprehensive Planning, all gave speeches and praised the many achievements of three years of eco-campus cooperation between the two nations.

Principal Deputy Assistant Administrator Jane Nishida first congratulated Rock Creek Forest Elementary School for being awarded the Greenflag certification

and went on to encourage the students present to go out and teach what they had learned about ecosystem preservation to others. Under the Eco-campus

Partnership Program, Rock Creek Forest Elementary School is twinned with Long-Chi Elementary School in Tainan City, whose principal, Mr. Hsin-Chang Chen, was one of Taiwan's eco-school representatives at the event. Both principals expressed the hope that their eco-school partnership would be long and mutually beneficial.

The Taiwan-USA Eco-Campus Partnership Program aims to use the existing US eco-school program to establish Taiwan-USA eco-school partnerships that are in line with international practice and introduce the international eco-campus accreditation system to Taiwan. Since the beginning of the plan in 2014, 85 of Taiwan's eco-schools have formed partnerships with eco-schools in the USA. The EPA will ensure that exchanges of knowledge and experience will continue through the implementation of the Taiwan-USA Eco-Campus Partnership Program.

To make the exchanges easier and more meaningful, every year groups from each school visit their sister school, giving students and teachers opportunities to learn from each other face-to-face and gain a greater understanding of the specifics of the Taiwan-USA eco-school partnership. Taiwan's delegation to the USA this year included not just EPA representatives but also seven representatives of Taiwan's eco-schools and two officials from local government environmental protection bureaus. The delegation visited eco-schools in New York City, New Jersey, Maryland and Washington, District of Columbia.

The American schools put on displays of the achievements of the past three years of cooperation, including the individual projects that the 85 sister schools had worked on and visual records and mementos of their visits to each other's schools.

## Water

# Amendments to Water Pollution Control Measures and Permit Application Review Regulations Announced

The EPA has announced amendments to the *Water Pollution Control Measures and Permit Application Review Management Regulations* (水污染防治措施計畫及許可申請審查管理辦法). The amendments aim to streamline the procedures for trial operations and functionality testing in order to improve wastewater treatment capability and to tighten permit criteria so as to prevent wastewater being stored and later discharged through bypass channels.

The amended *Water Pollution Control Measures and Permit Application Review Management Regulations* came into force on 28 October 2016. The main points of the amendments are as follows:

1) The procedure for trial operation modifications have been simplified: A trial operation modification application will no longer be required if the trial run does not interfere with the frequency and location of sampling, water quality measurement items, manufacturing operation conditions, effluent discharge volumes, pollutant composition, or permitted maximum pollutant concentrations. However, explanations of any changes made must be submitted with a functionality test report.

2) The principles for approving operating parameters for wastewater treatment facilities have been clarified, allowing for more flexible operations management.

Operating parameters should be determined according to functionality test results and the parameters stated on the permit will be allowed a +/-10% margin of error.

3) To simplify the conditions for functionality tests, the requirement for such tests in the following situations will be waived: the replacement of old equipment; changing of accessory equipment at wastewater treatment facilities; and changing of livestock waste biogas collection bags. In addition, the requirement will be waived when additional treatment equipment is installed at wastewater treatment facilities. Also, the requirement will be waived when increasing the wastewater treatment capacity, but the daily maximum volume of treated wastewater is not increased, the quality of the wastewater to be treated is not changed, or the modification is not made in response to tighter environmental standards.

4) Procedures have also been simplified for construction improvements, and modifications in the middle of the functionality test. Application for alteration and approval will only be required for alterations that affect water consumption volumes, volume of wastewater produced from manufacturing equipment, the scale of production or service, or manufacturing condition alterations that affect the volume of wastewater produced.

5. To encourage enterprises to employ measures or technologies to improve their wastewater treatment facilities, a new regulation governing technology testing has been added. Enterprises must submit a technology testing plan to their local competent authority for future reference and carry out the tests within the period stated in the plan. The tested items must include the approved collection and treatment equipment, operation procedures, and discharge outlet stated in the enterprise’s Water Pollution Control Measures or effluent discharge permit.

6. To encourage enterprises to recycle more of their wastewater, only those that recycle and reuse all their wastewater need to be reviewed and undergo onsite inspections by outside experts.

7. The amendments added notification procedures

for the approval authority to notify enterprises and sewage system operators to claim permits and approval documents for water pollution control measures. The amendments also stipulated the procedures to deal with enterprises and sewage operators that fail to claim their permits. The amendments also stipulated the procedures to deal with enterprises and sewage operators that fail to claim their permits. Within 14 days after the approval authority gives notice, enterprises and sewage operators must claim their water pollution control measure approval documents and permits, publish the contents of these on the EPA’s designated website, and pay their license fee.

8. The following enterprises will henceforth not be required to submit a Water Pollution Control Measure Plan nor apply for a permit:

Livestock enterprises whose livestock waste is completely used as fertilizer for agricultural land after anaerobic fermentation and aeration treatment

Operators of livestock waste treatment and recycling centers

Clinics that provide dialysis treatments for patients with kidney diseases

9. The information to be provided for permit alteration has been simplified: Photos showing completed automated water quality/quantity monitoring instruments and online transmission equipment are no longer required.

10. To prevent factory operators applying for wastewater storage permits to hide their intentions to illegally discharge wastewater via bypass, enterprises or sewage system operators that have obtained a storage permit will have to apply for a wastewater discharge permit if they are found to have discharged wastewater illegally twice and the effluent pollutants concentration is five times higher than the limits, or the pH is below two or over 11.





## Amendments to Water Pollution Control Measures and Test Reporting Management Regulations Announced

On 28 October 2016 the EPA announced amendments to the *Water Pollution Control Measures and Test Reporting Management Regulations* (水污染防治措施及檢測申報管理辦法). The revisions aim to facilitate the full disclosure of real-time data from automated wastewater quality/quantity monitoring instruments, improve the benefits of recycling livestock waste, and simplify related management and review procedures.

The main points of the changes to the *Water Pollution Control Measures and Test Reporting Management Regulations* are as follows:

1) Expanding the scope of suitable users of livestock waste fermentation liquid and sediment as agricultural fertilizer: It was added that after anaerobic fermentation and aeration treatment, livestock waste fermentation liquid and sediments can be used as fertilizer for agricultural land. In addition, agricultural land is clearly defined as land registered under a general or specific agricultural zone and classified as agricultural land.

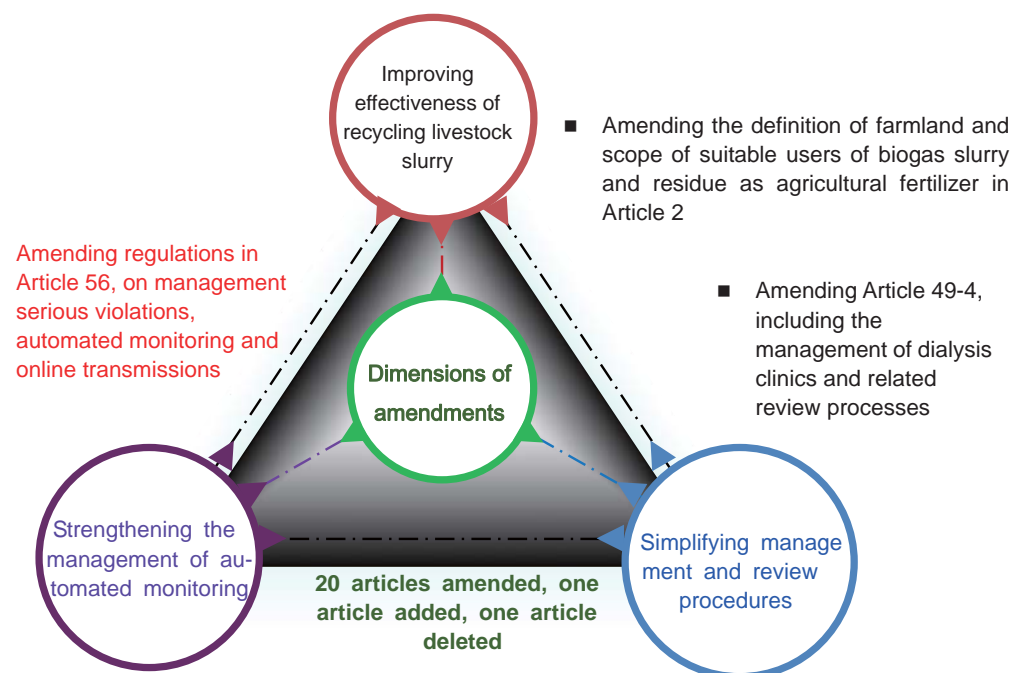
2) Adjusting the groundwater background values and soil quality test items for agricultural land on which livestock waste fermentation liquid and sediment is used as fertilizer: Testing for  $\text{NH}_4^+\text{-N}$  in fermentation liquid and sediment; pH, nitrate nitrogen, total phosphorus, copper, and zinc in groundwater; and pH and total phosphorus in soil are no longer required.

3) It was added that enterprises that have permission to discharge wastewater amounting to 1,500-5,000  $\text{m}^3$ /day must submit all their wastewater quality/quantity monitoring data online.

4) The administrative process for having automated wastewater quality/quantity monitoring instruments installed has been simplified by removing the requirement to modify the permit. Monitoring data and online data verification reports are also now fully governed by regulations. Written explanations of measures that enterprises adopt and the approval documents will have to be submitted online by the date set by the central competent authority.

5) The administrative management of dialysis clinics has been simplified: Clinics that have wastewater management plans approved by the local competent authority before operating will no longer need to submit further test reports.

The installation of automated wastewater quality/quantity monitoring instruments means that the public now has access to fully transparent real-time wastewater quality data. The simplification of the regulations for using livestock waste fermentation liquid and sediment as agricultural fertilizer will reduce the workload of livestock enterprises and thus increase the willingness to use them, which will help keep Taiwan's waterbodies cleaner.



► Framework of amendments

## Ecolabeling

## Environmental Bonus Points Available for Green Consumers

To promote green lifestyles, the EPA has rolled out its 10,000 Bonus Points for Green Shopping events through its green points apps. Whenever members of the public take the metro or buy eco-friendly products anywhere that accepts EPA environmental bonus points, their accumulated bonus points can be used to offset the cost of their purchase. The EPA also holds related events with local environmental groups at which bonus points will be given away to participating members of the public.

Members of the public who download the EPA's green points app and open a bonus points account can immediately begin to participate in the Bonus Points for Green Shopping scheme using their EasyCard, iPass card, other accepted membership cards or account numbers, or their cellphone's barcode scanner to build up points in their accounts. Also, anyone who takes the metro or buys certified eco-friendly products can also win bonus points.

As of now, accumulated green points can be used to offset part or all of the cost of buying toilet paper, cleaning detergents, thermo mugs, food containers, cooking oil or other Green Mark or carbon footprint labeled products at RT Mart, A-Mart, Taisuco, and Hi-Life convenience stores as well as online through the ET Mall and HCT Mall websites. One hundred

bonus points will be the equivalent of NT\$1 worth of green shopping. In addition, the points can also be used to offset the cost of staying in or visiting 12 other certified green enterprises in Taiwan, including eco-friendly hotels, eco-tourist sites, and environmental education venues.

The EPA is keen to encourage the public to take part in the green point scheme and the 10,000 Bonus Points for Green Shopping events will continue until 31 December 2016. Members of the public who have green point accounts can get 10,000 green points (the equivalent of NT\$100) if they buy products at any of the aforementioned retail outlets (but just one time per customer). More details on the events can be found on the EPA website at <http://www.greenpoint.org.tw/>.

## Control &amp; Evaluation

## Twenty-six Enterprises Win Enterprise Environmental Protection Awards

To recognize the dedication of private enterprises to environmental protection work, the EPA established the Enterprise Environmental Protection Awards 25 years ago. This year the awards presentation ceremony was held on 2 November 2016, with a total of 26 enterprises receiving awards. Among them, the Dah-Tam Power Plant of Taiwan Power Company and the Aspire Resort of Aspire Park Development Company won the Honorable Enterprise Environmental Protection Award for receiving the enterprise environmental award three years in a row.

This year marks the 25th anniversary of the Enterprise Environmental Protection Awards, launched in 1992. A total of 349 enterprises have won the award, with 41 enterprises having won awards three years in a row. As for the type of winners, early winners came mostly from traditional industries or petrochemical industries. The types of winning enterprises gradually grew more diverse, as electronics, semiconductor, medical, educational, financial, and technical service industries began to emerge triumphant.

With economic development and changes in the international arena, the EPA spares no effort in encouraging enterprises toward establishing circular production and lifestyles. By way of strengthening the integration of resources, recycling and reuse, the EPA expects to create zero-waste, low energy consumption and an environmentally friendly society.

Twenty-six enterprises were awarded 2016 Enterprise Environmental Protection Awards. Among

them, the Dah-Tam Power Plant of Taiwan Power Company and the Aspire Resort of Aspire Park Development Company won the Honorable Enterprise Environmental Protection Award for receiving the enterprise environmental award three years in a row. Particularly worth mentioning is the Aspire Resort, the first hotel to win the Honorary Enterprise Environmental Award.

The 26 winners of the 25th Enterprise Environmental Protection Awards are:

United Microelectronics Corporation's Fab8A Plant; First Commercial Bank; Bali Refuse Incineration Plant of New Taipei City (entrusts Onyx Ta-Ho Environmental Services Co. for operation); AU Optronics Corp. Taoyuan Branch; United Microelectronics Corporation's Fab8E Plant; Kuozui Motors Ltd. Chung Li Plant; Chiayi City Refuse Incineration Plant (Chiayi City Government entrusts Onyx Ta-Ho Environmental Services Co.

for operation); Yongan Liquid Natural Gas plant, CPC Corp., Taiwan; Taiwan Power Company's Dah-Tam Thermal Power Plant; Southern Taiwan Science Park's Resource Recycling Center; Eastern Branch, Marketing Business Division, CPC Corp., Taiwan; Aspire Resort of Aspire Park Development Company; Kuang Tien General Hospital; Xindian Refuse Incineration Plant; Vanguard International Semiconductor Corporation's Fab2 Plant; Grundfos Taiwan; Apex Material Technology Corp; Yongkang Refuse Incineration Plant of Tainan City (entrusts Onyx Ta-Ho Environmental Services Co. for operation); Kangshan Plant, Aerospace Industrial Development Corp; Tainan Plant, ChipMOS Technologies INC; Chaiyi Branch, Onyx Ta-Ho Environmental Services Co., Ltd; Fuji Xerox Taiwan Corporation; CTBC Financial Holding Co., Ltd; Refining & Manufacturing Research Institute, CPC Corp., Taiwan; Inventec Corporation; Chia-Nan Branch, Marketing Business Division, CPC Corp., Taiwan.



▶ The 26 winners of the 25th Enterprise Environmental Protection Awards

## News Briefs

### US EPA Praises Taiwan's Efforts in Promoting Global Environmental Education

Jane Nishida, Principal Deputy Assistant Administrator of the USEPA, attended the opening ceremony of the annual congress of the 45th North American Environmental Education Association held in Madison, Wisconsin in October 2016. In her speech, she particularly praised

Taiwan's efforts and achievements in promoting the International Environmental Partnership and the Global Environmental Education Program (GEEP). A video clip, made by the office of USEPA Administrator Gina McCarthy, was broadcasted in the opening ceremony. Aside from expressing the USEPA's support and affirmation of environmental education, in the video Administrator McCarthy mentioned the joint efforts with the Taiwan EPA

in 2014 that launched the global environmental education partnership program. She thanked Taiwan for its commitment and support of such a program, and praised Taiwan's progress and achievements in promoting global environmental education over the last two years.

### EPA Promotes Green Tourism at Taipei Travel Fair

To promote the eco-friendly and energy-saving ways of green tourism, the EPA set up a "Green Tourism Shop" pavilion at the 2016 Taipei International Travel Fair, held from 4~7 November 2016. Aiming to encourage members of the public to participate in green tourism and to adopt green living, the EPA invited green service providers to jointly participate in the exhibition. Aside from discount vouchers and shopping certificates provided by green hotels and star-rated restaurants, there were also daily raffle draws with big prizes, such as free semi-self-guided tour packages or free hotel accommodation vouchers, jointly provided by green industry members.

### Winning Short Films on Green Design Available Online

In 2016, the EPA launched the first Cradle to Cradle Multimedia Production Contest to promote the cradle to cradle design concept to the general public, and an award ceremony for the winners was held on 28 October. A panel of judges selected 12 short films from the submissions. After a rigorous process, three winning films, four outstanding works and five finalists were announced.

The top winning film is "A Letter to My Child," which relates the angst of a workforce novice who feels angry and frustrated about the dirty and disorderly Earth that human beings are leaving to posterity. He therefore writes a letter to his child expounding the concept of cradle to cradle design, hoping that a clean Earth could be preserved for the next generation. Information on other winning films and the cradle to cradle design concept can be found on the Taiwan Cradle to Cradle Platform at [www.c2cplatform.tw](http://www.c2cplatform.tw).

### Taiwan and US EPAs Jointly Hold Sustainable Materials Management Conference and Technology Exhibition

The Fourth International Conference on Sustainable Materials Management and Resource Sustainability Technology Exhibition was held in Taipei from 25 to 27

October 2016. It was co-hosted by the Taiwan and the US EPAs, and sponsored by the Ministry of Foreign Affairs and the American Institute in Taiwan. The event included an international conference, visits and consultative meetings. On 25 October, the participants visited the ICT Museum of the Industrial Technology Research Institute to see a material flow system designed to create a green economy. The participants also visited E&E Recycling Company to see the achievements of Taiwan enterprises in resource recycling, recovery and regeneration.

The conference hosted over 10 officials from El Salvador, Indonesia, Japan, the UK, the US, and Thailand, and representatives from Taiwan's central and local governments, academia, and researchers also attended. The US EPA's former Regional Administrator for Region 9, Jared Blumenfeld, gave a speech titled "Sustainable Materials Management: The Path to Zero Waste." The Deputy Director of the San Francisco Department of the Environment, Jennifer Kass, spoke about San Francisco's Sustainable Materials Management (SMM) efforts. The representative of the Taiwan EPA, Dr. Harvey Houg, shared Taiwan's experiences in a speech titled "From Waste Management to Resource Circulation and SMM in Taiwan." Through this conference, the EPA hoped to introduce the concepts of "limited resources, unlimited materials and circular economy in Taiwan" so that the public would realize that circular material utilization is the only way to create a promising future.

An international cooperation consultation meeting was also jointly held by the Taiwan and US EPAs, at which delegates to the Conference were invited to work on the scope and mechanisms of continued international cooperation. The consultation meeting will be held on a regular basis in different countries to enhance international cooperation and establish a solid cooperation mechanism to promote SMM and a circular economy.

From 26 to 27 October, a Resource Sustainability Technology Exhibition was held in five pavilions. Among them, the Sustainable Materials Management Technology Pavilion highlighted the 6Rs – reduction, reuse, recycling, energy recovery, land reclamation, and redesign. The exhibition explained sustainable materials management with computers onsite for visitors to operate themselves to understand the flow and distribution of various materials. It also had 3D printers that use environmentally friendly polylactic acid, for visitors to print products.

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