



Environmental Policy Monthly

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

ISSN: 1811-4008 GPN: 2008600068

The EPM is available at <https://www.epa.gov.tw/ENG/BE5D11C9F277E893>



Feature Article

Livestock Resources Find New Value as Green Energy

Since 2016, the EPA has been collaborating with the Council of Agriculture (COA) in implementing policies on livestock manure reutilization. So far a total of 1,500 livestock farms have applied to use manure fermentation digestate as fertilizers, recycle agricultural wastes for different uses, and use the wastewater that meets the *Effluent Standards* (放流水標準) for irrigation. These manure recycling actions will help recycle the nitrogenous nutrients, produce green energy, improve river water quality, reduce air odors, and cut down greenhouse gas emissions.

Environmental protection has been pursued for over two decades in Taiwan. Economic development has led to worsening pollution and more strain on the environment. With insufficient waste treatment and disposal facilities, random waste dumping has caused soil and groundwater pollution that society needs to tackle urgently.

Background

On 24 November 2015, the EPA began to formulate Chapter 10-1 of 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) to promote the use of manure fermentation digestate as fertilizers. The process was regularly reviewed on a rolling basis and the COA and regional agricultural authorities were coordinated to assist with the reviews. The EPA also cooperated with local governments and industry groups to provide livestock enterprises with

In This Issue

Feature Article: Livestock Resources Find New Value as Green Energy.....	01
EPA Presents Drone Monitoring of Water Quality and Wastewater Phosphorus Removal Technology.....	04
Amendments to Standards for Storage, Clearance and Disposal of Industrial Waste Preannounced.....	05
EPA Teams Up with EU Economic and Trade Office in Beach Cleanup.....	06
EPA to Launch Acoustic Camera Systems in January 2021.....	07
Regulations Regarding Toxic Chemical Hazard Prevention and Response Plan Amended.....	09
"Laughing Gas" Listed as the First Concerned Chemical Substance.....	09
EPA Hosts 2020 Taiwan Circular Economy Summit.....	10
EPA Builds Multilateral Cooperation in Recycling and Circularity.....	11
EPA and Local Governments Hold First Joint Inspections for VOC Emissions.....	12

free services such as conducting tests on digestate contents and background soil and groundwater data, matching farmlands in need of irrigation, and writing and submitting applications. Not only is the application for manure reutilization easy with free assistance from the government, farms that use anaerobic fermentation can reduce odors, produce digestate as fertilizers, and generate power with biogas. Other benefits of manure reutilization include lowering the water pollution control fees that farms have to pay, reducing the use of chemical fertilizers, and improving the overall environmental quality.

Policies on livestock manure reutilization have been promoted jointly by the EPA and the COA since 2016. To help small livestock farms treat their wastewater and reutilize resources, the EPA subsidized local governments to promote the Large Farms Assist Small Farms projects, which involves the collection and treatment or centralized treatment of small farms' manure by large farms. Currently, 13 applications in six counties/cities have been approved with the capability of handling manure from 120,000 heads of livestock on 53 farms.

A press conference was held by the EPA in Chuenmin Livestock Farm in Taishi Township, Yunlin County on 3 November 2020 to recognize the effort and achievements of local governments. The EPA Deputy Minister Hung-Teh Tsai, the Director-General of the EPA's Department of Water Quality Protection Sheng-Chong Wu, Yunlin County Deputy Commissioner Shu-Ya Hsieh, and the Director-General of Yunlin Environmental Bureau Yu-Lin Kuo were among the nearly 200 guests at the event.

Deputy Minister Tsai conducted the launch ceremony to promote livestock manure reutilization and demonstrate the determination of the central and local governments to reduce water pollution from livestock manure and keep farmlands fertile through manure reutilization. In addition, a project that was subsidized by the EPA and carried out by Luye Green Energy Company in Yunlin to treat manure for small farms (a Large Farms Assist Small Farms project) was officially launched during the event.

Achievements



▲ Deputy Minister Hung-Teh Tsai (fifth from right) conducts the launch ceremony to promote livestock manure reutilization.

According to the EPA, since 2016 more than 1,500 livestock farms have adopted manure reutilization measures including using fermentation digestate as fertilizers or for different purposes and recycling wastewater that met the *Effluent Standards* for irrigation. A total of 678 metric tons of recycled farm wastewater have been approved annually to be used for irrigation. The use of digestate as fertilizers has replaced 188,578 bags of chemical fertilizers and cut fertilizer costs by NT\$64,110,000. In addition, the use of recycled wastewater for irrigation has reduced water pollution and saved NT\$52,240,000 in water pollution control fees, equivalent to the capacity of 773 gravel contact oxidation treatment facilities.

Considering the inadequate wastewater treatment facilities and reutilization capacities that small farms usually have, the EPA has since 2018 subsidized local governments to install treatment and reutilization facilities in large farms to treat manure for other livestock farms (dubbed as Large Farms Assist Small Farms or centralized treatment projects). Currently, subsidies have been approved for 13 such projects, which in total are capable of treating manure from 120,000 heads of livestock and reducing annual

carbon emissions by 120,000 metric tons. The installed power generation facilities in these projects have a capacity of 1,391 kilowatts in total. Seven of the 13 projects are located in Yunlin County, including Luye Green Energy Company which signed the contract on 3 November.

Luye Green Energy Company plans to set up manure treatment and reutilization equipment in Chuanmin Livestock Farm in Taishi Township and will import stirred anaerobic digesters from Germany, desulfurization systems from Denmark, biogas micro-turbine generators from the U.S., and biogas compressors from Italy. It will install pipes to collect and transport manure from 7,979 pigs in the neighboring four farms. With the capacity to treat manure from 17,239 heads of livestock, the entire project will cost approximately NT\$182 million and will receive a subsidy of NT\$28.99 million from the EPA. Its daily wastewater treatment capacity will be 172.4 metric tons, 75% of which will be recycled and reused for irrigation (in compliance with the *Effluent Standards*). It will prevent 4.7 metric tons of livestock wastewater from entering Hsinhuwei Stream every year. Use of biogas for power generation will also



▲ During the press conference, guests visit a peanut farm which was irrigated with fermentation digestate in Yunlin County.

result in reduction of annual carbon emissions by roughly 19,000 metric tons.

Achieving circular economy in livestock industry

The EPA pointed out that a circular economy can be created in the livestock industry by effectively turning livestock resources into nitrogenous fertilizers and green energy. Not only can animal manure be utilized as fertilizer after anaerobic fermentation, the biogas generated during the process can also be used to generate electricity, which can be sold to Taipower. In addition, the reutilization of livestock manure can help improve the quality of water bodies and reduce odor problems. The Large Farms Assist Small Farms and the centralized treatment models can become pioneering models for building a circular economy in the livestock industry. Enterprises can learn from these experiences and replace their traditional business models with ones that are more economically sustainable and energy conserving.

During the press conference, guests went on tours to see farms that were irrigated with fermentation digestate. One such place was Friendly Farm Under the Moon, which advocates peaceful coexistence with nature. Wheat grown on the farm still retains an authentic, untainted aroma as farmers practice

agrochemical-free, pesticide-free farming methods. Another farm that guests visited was a peanut farm irrigated with fermentation digestate as well. Peanuts are a major crop in Yunlin County, which is home to 70% of the nation's peanut production. These tours demonstrated that the public and private sectors can work together to carry out a policy that benefits the livestock industry, agriculture, and the environment.

Future prospects

The EPA is still providing subsidies for various manure reutilization endeavors including Large Farms Assist Small Farms projects or centralized treatment of livestock manure. There are also subsidies for the purchase of digestate collection vehicles, irrigation vehicles or equipment, and farm storage tanks. Farmers are welcomed to contact their local environmental bureau for more information. It is hoped that through more promotion, more farmers and livestock enterprises will join the manure reutilization endeavors and achieve the goals of having 5% of all agricultural manure reutilized by 2025 and 10% by 2029. Ultimately, the public can enjoy improved waterfront environments and living quality as less livestock manure enters rivers and the industry discovers new value in a circular economy.

Environmental Monitoring

EPA Presents Drone Monitoring of Water Quality and Wastewater Phosphorus Removal Technology

Striving to develop innovative water quality control and monitoring technologies, the EPA presented its latest achievements in water sampling by drone and household wastewater electrolysis phosphorus removal technology at Chengqing Lake Reservoir on 21 October. During the onsite demonstration, a drone carrying a monitoring instrument and sampling bag was used to conduct remote water quality monitoring and sampling of the reservoir water, demonstrating that drones can be used for water monitoring in a swift and safe fashion with low pollution and disturbances. An electrolytic phosphorus removal recycling tank that removes nutrients such as nitrogen and phosphorus from wastewater and converts them into fertilizer using electrolytic crystallization technology was also displayed in a public restroom nearby.

Reservoir water surveys are currently carried out by transporting personnel to sampling points in boats, which is time- and money-consuming, not to mention the risks to staff safety and the possibility of oil pollution. The traveling paths of the boats are often restricted by the terrain and water depth, and the representativeness of the water samples is therefore compromised. To solve the problem, the EPA commissioned National Cheng Kung University to examine the sampling spots and methods of current reservoir water sampling operations and develop feasible drone sampling technology with the aim of enhancing monitoring quality and maintaining data integrity. With the aid of drones, the management staff can quickly obtain the needed samples and accurately determine water quality and pollution hot zones.

Nutrients such as nitrogen and phosphorus can cause eutrophication and water quality deterioration

in reservoirs. Sources of nutrients include excess fertilization, agricultural and livestock wastes, and household and recreational wastewater. Currently, wastewater from households, restaurants, and restrooms around the reservoir watershed is usually only treated through septic tanks, which have limited phosphorous-removal capability. To cut down the pollution from nutrients in the reservoirs, National Cheng Kung University and National Kaohsiung University of Science and Technology applied electrocoagulation or dosing methods to recycle nitrogen and phosphorus in the septic tanks of public restrooms. The processes not only crystallize the nutrients into struvite (magnesium ammonium phosphate) which can be used as fertilizer, but also reduce the nutrients in the wastewater, achieving environmental protection and resource recycling at the same time.

Waste Management

Amendments to Standards for Storage, Clearance and Disposal of Industrial Waste Preannounced

On 23 July 2020, the EPA preannounced the partial revisions of the *Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste* (事業廢棄物貯存清除處理方法及設施標準). After meetings were held to gather opinions from stakeholders in response to the public's concern about landfill leakage, the preannounced revisions were modified. A second preannouncement was issued on 22 October 2020.

The revisions added regulations concerning environmental monitoring and other management-related matters to strengthen the management of landfills for waste final disposal and prevent the impacts that landfilling might cause to the surrounding environments. The EPA noted that the previous draft added that landfills operators shall regularly monitor groundwater quality and improve the management even after their use has ended. Landfill operators are required to submit post-closure restoration plans and carry out restoration, facility maintenance and monitoring according to the approved plans. Monitoring results are to be submitted online and posted on relevant government websites for public inquiry.

Since their promulgation on 8 May 1989, the Standards have undergone 13 revisions with the

latest one in February 2020. Taking sanitary landfill regulations in the US and Japan as references, the preannounced revisions required landfills to install composite liners at their bottoms and enhance facilities to effectively prevent leakage, while an exemption clause was added for existing landfills that have already installed liners and are unable to modify them. Moreover, the revisions changed the frequency of environmental monitoring during the post-closure restoration period as well as the time limit for submitting the monitoring results to keep relevant authorities updated on the environmental impacts of landfills.

Highlights of the revisions include:

1. Added regulations concerning the liners and leakage prevention facilities of sanitary landfills (Paragraph 34).

2. Modified regulations concerning earth covers and monitoring in sanitary and closed landfills (Paragraphs 35 and 39).

3. Added regulations concerning the implementation and the content of post-closure restoration plans as well as the restoration time limits (Paragraph 41-1).

4. Added regulations concerning post-closure

environmental monitoring and the conditions to end monitoring (Paragraph 41-2).

5. Added stipulations on when to submit the post-closure restoration plans for both new and existing landfills (Paragraph 41-3).

6. Revised regulations concerning the documentation, submission, and disclosure of monitoring results (Paragraph 41-4).

Environmental Management

EPA Teams Up with EU Economic and Trade Office in Beach Cleanup

Advocating “a healthy ocean without borders”, the EPA and European Economic and Trade Office in Taiwan (EETO) joined hands again in organizing a beach cleanup event. This time, the event was held in Wanli, New Taipei City on 17 October 2020 with nearly 200 participants. Led by EPA Minister Tzi-Chin Chang and the EETO Head Filip Grzegorzewski, personnel from the two agencies, EU Member State offices in Taiwan, the Ministry of Foreign Affairs (MOFA), the National Property Administration (NPA), and the Coast Guard Administration (CGA) all cleaned up the beach together.

Minister Chang remarked that the “Salute to the Ocean” policy implemented by the Executive Yuan was formulated to keep beaches clean and make sure that not an inch of Taiwan’s coastline would go unchecked by the government. The EPA has coordinated relevant ministries and county and city authorities to establish “regular cleaning”, “immediate cleaning”, and “urgent

cleaning” mechanisms for coastal sections in their respective jurisdictions. Now the cleaning frequency has been increased particularly for hotspots prone to accumulating large amounts of wastes. As of the end of September 2020, approximately 70,000 metric tons of fishing nets and other waste had been cleared in a total of 17,383 cleaning activities covering 10,598.8 kilometers of coastline.



▲ The EPA and European Economic and Trade Office in Taiwan (EETO) joined hands again in organizing a beach cleanup with nearly 200 participants.

EETO Head Grzegorzewski mentioned that the EU is dedicated to keeping ocean environments healthy and sustainable and mobilizes its delegations around the world to organize cleanup activities between September and November every year around the International Coastal Cleanup Day. Due to the Covid-19 pandemic, this event in Taiwan was one of the few cleanups that could still be held in 2020.

The event cleaned up approximately 404 kilograms of wastes and 36 kilograms of recyclables. The EPA said that this was the third cleanup the EPA had

jointly organized with EETO. The purpose of beach cleanups is not just to pick up trash on beaches, but more importantly, it's to put environmental education in action. The EPA will continue to work with different agencies and commit more resources to clean up the coasts, as well as call on the public to not only take part in cleanups, but also cut down the use of plastics and containers in their daily lives. This way, source reduction can be implemented to resolve the marine waste problem. As more and more people subscribe to the notions of "cleaning the ocean", "knowing the ocean", "approaching the ocean", and "entering the ocean", the ocean will ultimately be cleaner.

Noise Control

EPA to Launch Acoustic Camera Systems in January 2021

To crack down on noisy modified vehicles and improve the quality of life of citizens, the EPA is implementing "acoustic camera" technology for law enforcement. The EPA plans to employ 35 acoustic camera systems in 18 cities/counties across Taiwan starting from 1 January 2021. In the future, violations found based on the data collected by the acoustic cameras will be subject to a fine of NT\$1,800 to NT\$3,400 in accordance with the *Noise Control Act*. If any illegal modifications on vehicles are noticed via the pictures taken by acoustic cameras, violators shall make improvements within the prescribed time frame.

On 28 October, the EPA held a public demonstration to exhibit the accuracy and impartiality of the acoustic camera systems in front of the media and automotive enthusiast groups. The EPA stresses that unmodified cars, limited edition cars, sports cars with high horsepower, and cars or motorcycles modified with certified exhaust systems will not surpass the noise threshold easily without inappropriate driving behaviors such as engine revving.

The EPA is in the process of amending the *Motor Vehicle Noise Control Standards* and the *In-use Motor Vehicle Noise Control Regulations* to include regulations on the use of acoustic cameras. During the past two discussion meetings for the amendments, some car enthusiasts and clubs expressed their concerns regarding the accuracy and impartiality of the acoustic camera systems and the noise disturbance from the surrounding environment. To ease their concerns, the EPA held a public demonstration at a national laboratory for

noise regulations to show how an acoustic camera system is approved, how background noise is corrected for, and how loud vehicles are discerned. In addition, the EPA also demonstrated that the monitoring results acquired by the acoustic camera systems are no different from those acquired by using the existing method of manually operated microphones.

An acoustic camera system consists of a variety of equipment including microphones for noise detection, an anemometer for correcting for the environmental disturbances such as wind resistance, a fisheye camera that records the surrounding environment of the camera location within three seconds before and after the noise nuisance is detected, a license plate recognition system, and a control unit. The EPA states that the new monitoring system will be strictly calibrated and triply approved to ensure its accuracy and impartiality.

1. Verification approval: the sound level meters

used in acoustic camera systems must meet the qualifications of a sound level meter for official inspection and testing (Class 1) in compliance with the Weights and Measures Act. In addition, the meters have to be verified by the Bureau of Standards, Metrology and Inspection of the Ministry of Economic Affairs every two years.

2. Comparison testing: the acoustic camera systems must go through comparison tests conducted by EPA-approved noise labs once a year based on the *Noise Measuring Methods for In-Use Motor Vehicles – Image-Assisted Method* (NIEA P211.80B) announced by the National Institute of Environmental Analysis.

3. Strict Calibration: when an acoustic camera system is in use for law enforcement, it shall be calibrated using the sound calibrator approved by the National Measurement Laboratory once every three days. The system shall also be adjusted according to the national standard time every five minutes.

During the demonstration, the EPA conducted comparisons among unmodified motorcycles, modified motorcycles with certified parts, modified motorcycles with uncertified exhaust systems, and unmodified

limited-edition sports cars as they accelerate to 50 km/h, 60 km/h and 70 km/h. The demonstration showed that inappropriate driving behaviors and illegally modified vehicles exceeded the limits of the noise standards, while unmodified or legally modified vehicles easily passed the test. The vehicles modified with the certified exhaust pipes of the quality brand “Akrapovič” also passed the test.

When an acoustic camera system detects noise that exceeds the limits, it will be confirmed as a violation after adjusting for the background noise and eliminating the environmental disturbance within three seconds before and after the detection, if there is no rain at the moment of detection and wind speed is lower than 5 m/s. Any violations will be subject to a fine of NT\$1,800 to NT\$3,600 in accordance with Article 26 of the *Noise Control Act*. If illegally modified vehicles with uncertified exhaust pipes are noticed in the pictures taken by the cameras, violators are to go through in-person inspections and make improvements within a prescribed time frame in compliance with the requests from local environmental protection bureaus.



▲ When an acoustic camera system detects noise that exceeds limits, violations will be subject to a fine of NT\$1,800 to NT\$3,600.

Chemicals

Regulations Regarding Toxic Chemical Hazard Prevention and Response Plan Amended

The *Toxic Chemical Substances Hazard Prevention and Response Plan Regulations* have been amended and renamed the *Toxic and Concerned Chemical Substances Hazard Prevention and Response Plan Regulations*.

The amendments expanded the scope of control for Class 1 to Class 3 toxic chemical substances to include the concerned chemical substances that have been announced as hazardous. The amendments also stipulate that handlers of more than one chemical substance shall evaluate the chemical risks and the response capability of the entire handling site before formulating the facility/site hazard prevention and response plan. In addition, the amendments require handling sites with higher calculated risk potential to add an external notification system and additional relevant information in the facility/site hazard prevention and response plans. The amendments also stipulate that the competent authorities may consider operational risks and require operators of handling sites with a history of major incidents to supplement their response plans with relevant information and resubmit them.

According to Article 35 paragraph 2 of the *Toxic and Concerned Chemical Substances Control Act*, hazard prevention and response plans are to be published on the designated website for information transparency

when their content does not concern personal information, national security, classified materials on national defense, and trade secrets. To protect the rights of the handlers who had submitted their response plans before the amendments took effect and to carry out the doctrine of legitimate expectation, a two-year grace period is granted to the handlers in consideration of the large scale of the amendments. The grace period will give handlers sufficient time to re-evaluate the handling risks of the sites and revise their response plans in accordance with the amendments for submission.

The EPA reminds handlers of the importance of regular preparation for solid disaster prevention. By enhancing the preparation of relevant information, formulating proper response measures and conducting regular drills, an emergency response can be implemented immediately should an incident happen. Preparing for emergencies can also effectively reduce the severity of disasters, protect the safety of human life and property, and lessen the potential harm to the environment.

Chemicals

“Laughing Gas” Listed as the First Concerned Chemical Substance

The EPA announced on 30 October 2020 that “laughing gas” has been listed as the first concerned chemical substance. The EPA will work with the Ministry of Economic Affairs (MOEA), the Ministry of Health and Welfare (MOHW), and the National Police Agency (NPA) to implement joint control. Activities that involve the manufacture, import, sale, use and storage of laughing gas shall acquire prior permission, and all operating information shall be reported. In addition, online transactions of laughing gas are banned immediately.

A heavy fine of NT\$30,000 to NT\$300,000 will be imposed for any illegal possession of laughing gas. If the illegal possession causes adverse effects on human health or death, violators may be subject to life imprisonment, or more than seven years of imprisonment and fines of up to NT\$10,000,000.

The EPA points out that laughing gas is the first

concerned chemical substance that requires enhanced control, which will be implemented based on the “4 dos and 2 don’ts” principles: “do get permits, do label, do keep online records of every transaction daily, do report every month, don’t sell or buy online, and don’t operate without permits.” The purpose of the measures is to better track the flow of laughing gas with transaction records and reports. In addition,

except for specific purposes that are approved by the government, addition of sulfur dioxide (SO₂) as an odorant to laughing gas will be required in the future to deter its improper use.

Business operators who were already using laughing gas for industrial purposes before the announcement are to start keeping online records of all transactions every day, submit monthly reports, and stop any online transactions as of the announcement date. The businesses are also required to acquire permits, label laughing gas with the “industrial use only, do not inhale” warning, prepare safety data sheets, and add SO₂ in accordance with the regulations within six months of the announcement, which will be made by 1 May 2021.

▶ *To safeguard public health and implement regulations, the EPA will focus on reinforcing onsite inspections and providing assistance to businesses to deter improper use of laughing gas.*



Waste Management

EPA Hosts 2020 Taiwan Circular Economy Summit

The EPA hosted the “2020 Taiwan Circular Economy Summit” on 16 October, which kicked off with a grand ceremony. Participants included the deputy ministers from the EPA, the MOEA and the Council of Agriculture (COA), along with representatives of the Czech Republic, Denmark, Finland, France, India, Israel, Luxembourg, Malaysia, the Netherlands, Thailand, and Vietnam. The event also invited multiple distinguished experts and scholars to carry out dialogues on environmental issues regarding plastics, construction, and agriculture. The dialogues highlighted the value of circular economy and echoed the international discussion on green recovery issues.

During the summit, EPA Deputy Minister Chih-hsiu Shen, MOEA Deputy Minister Wen-sheng Tseng, and COA Deputy Minister Chin-cheng Huang shared Taiwan’s experience in promoting the cooperation between the recycling industry and businesses. They also discussed strategies concerning deregulation, cross-sector cooperation, communication between the government and society, and industrial transformation, so as to gradually achieve the national goals regarding circular economy and a

zero-waste society. On the issue of plastics, Lealea Enterprise and Far Eastern New Century, two of the biggest companies that manufacture environmentally friendly textiles in Taiwan, were invited to share their experience about how to successfully enter the international supply chain. They talked about how to find more cooperation opportunities in global supply chain restructuring and environmental exchanges. Haiyong Studio was also invited to share their experience on how they organized participants for

beach cleanups in Lambai Island to work towards a plastic-free island.

On construction issues, the EPA, the MOEA and the Public Construction Commission (PCC) talked about the applications of recycled construction aggregates, a topic that has raised public concern, and the treatment of incinerator bottom ash and furnace slag. They also covered implementation strategies on circular design and modular construction to reduce construction waste. An example of success is National Cheng Kung University's rebuilding of hospital wards in response to COVID-19, using a modular construction method.

During the agriculture portion of the summit, the EPA and the COA explained government policies on circular agriculture, while Taiwan Sugar Corporation and Chao Ying-Feng Enterprise shared their experiences in the reuse of leftover agricultural resources. In addition, Fwusow Industry talked about how they practice circular economy concepts by fully reusing resources from different departments of their business, such as farming, food production, fertilizer manufacturing, and fishery.

Interministerial cooperation is crucial to achieving a circular economy, which the EPA has been striving to promote. The EPA formulated Resource Recycling and Reuse Plans to boost the implementation effectiveness of circular economy policies. Additionally, the EPA encourages businesses to exchange experiences and information on business transformation to create new supply chains and values. Business cooperation also helps reduce waste and exploitation of natural resources. The EPA urges businesses to take joint responsibility for environmental sustainability and help Taiwan move towards a green recovery and become a circular economy hotspot in Asia.

The "2020 Taiwan Circular Economy Summit" was an exceptional event featuring successful business transformation stories that revolve around the themes of plastics, construction and agriculture. The summit was broadcast live in both Chinese and English. Readers can use the links listed below to participate in this annual circular economy event.
Chinese version: <https://youtu.be/jTAdZVuWqTg>
English version: <https://youtu.be/tlfUN7Tf4oQ>

Recycling

EPA Builds Multilateral Cooperation in Recycling and Circularity

To continue expanding international partnerships in recycling and strengthening cooperative relations with other countries targeted in the New Southbound Policy, the EPA held the "Get in the Loop: from Recycling to Circularity" on 22-23 and 28-29 October 2020. There were over 20 participants from the representative offices of Australia, Denmark, Indonesia, Malaysia, New Zealand, South Africa, Spain, Sweden, and Thailand. The purpose of the event was to stimulate international exchange, promote Taiwan's technology and experience in recycling, and achieve the goal of environmental sustainability.

Taiwan is a small but densely populated country. Hence, finding places for landfills and waste treatment can be difficult with Taiwan's limited space. The EPA launched the Four-in-one Resource Recycling Plan in 1997 as an effort to develop Taiwan's recycling system. The plan has created business opportunities that generate tens of billions of New Taiwan Dollars every year and tens of thousands of jobs. After years of implementation, Taiwan's success in utilizing the Recycling Fund for subsidies has made Taiwan one of the world's leading countries in recycling.

The EPA explained that waste is a misplaced resource. The recycling industry in Taiwan has performed remarkably and is capable of transforming the typical waste recycling pattern by developing unique applications, opening a new world for waste treatment. For example, Taiwan has used waste glass for road construction in the past, which is an example of resource recovery. However, we are seeing some startup companies turning waste glass into artworks, which give it even more added value.

This event gave Taiwan a platform to share its experiences and technology with more countries and

to carry out UN Sustainable Development Goal 17 by establishing partnerships. The most important purpose of the event was to show the world that “Taiwan can help” and that Taiwan is more than willing to provide its resource recycling technologies to countries in

need. Through promoting regional cooperation, the EPA aims to gain more business and collaboration opportunities in the future and accomplish more fruitful results.

Recycling

EPA and Local Governments Hold First Joint Inspections for VOC Emissions

In response to seasonal reduced air quality in western Taiwan in the fall and winter, the EPA joined forces with seven cities/counties to hold the first joint air quality inspections for this year. Participating cities/counties included Changhua County, Yunlin County, Chiayi County, Tainan City, Kaohsiung City, and Pingtung County. In light of the fact that ozone often exceeds the recommended limit in October, the inspections were held on 12-14 October 2020 and mainly focused on auditing emission sources of volatile organic compounds (VOCs), which are considered ozone precursors. A total of 31 public and private premises across seven cities/counties were audited. The EPA found three violations during the inspections and estimates that fines totaling NT\$1,670,000 will be issued.

Due to poor dispersion of pollutant emissions caused by the northeast monsoon and topographic effects, air quality in western Taiwan usually worsens during fall and winter months, with increased levels of particulate matter and ozone emissions. The inspections this year focused on ozone precursors and first targeted the petrochemical industry. During the inspections, the Chiayi County Environmental Protection Bureau conducted thorough audits of the air quality deterioration control plans of businesses, such as the Hsinkang Plant of Formosa Plastics Corporation. The Yunlin County Environmental Protection Bureau checked for VOC leaks and implemented comprehensive audits of the Sixth Naphtha Cracking Plant Complex. The Kaohsiung City Environmental Protection Bureau also checked for VOC leaks in government-owned enterprises such as CPC Corporation and discovered two violations (the highest value detected was 67,571

ppm while the limit is 2,000 ppm). The Tainan City Environmental Protection Bureau carried out inspections in eight districts, among which they found a factory in Shanhua District that had been emitting high concentrations of VOCs through illegal channels, and penalties have been issued accordingly. In addition, Chiayi City, Changhua County, Pingtung County, and the EPA's Bureau of Environmental Inspection completed various other inspections.

The EPA stated that VOC exceedances have always been the most detected violations in petrochemical plant leak inspections. However, among the 3,400 leak inspections conducted in 31 petrochemical plants this time, only one plant exceeded the limit. This result shows that with the continuous inspections and audits conducted by the environmental authorities, businesses have gradually improved the VOC leak problems.

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

Publisher
Tzi-Chin Chang, Minister

Editor-in-Chief
Shyh-Wei Chen

Executive Editors
Shiuan-Wu Chang; Tsu-Shou Cheng; Chun-Wei Yang;
Shaowen Chang; Jason Hoy; Ken Lee

For inquiries or subscriptions, please contact:

Environmental Policy Monthly
Office of Sustainable Development
Environmental Protection Administration
83, Sec. 1, Jhonghua Rd., Taipei 100, R.O.C. (Taiwan)
tel: 886-2-2311-7722 ext. 2217
fax: 886-2-2311-5486

Contents Copyright 2020