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Feature Article

Environmental Resource Surveying and Monitoring

Environmental resource surveying and monitoring is an important foundation for environmental policy implementation. In addition to meteorology, hydrology, geology and mineral resources, resource surveying also covers ecosystems and biological categories and groups. In the future, the surveying of these subjects will be incorporated along with the monitoring of air quality, rivers, groundwater, and marine water quality to build a comprehensive environmental resources monitoring system in Taiwan.

Environmental resource surveying is rudimentary for environmental protection. It helps environmental policy makers by providing information on long-term environmental changes and resource distribution. It is wide-ranging, including biotic and abiotic resources related to the environment. And this information includes not only the conventionally defined environmental quality data such as air and water pollution, but in the future should also cover ecological, conservation, and even socioeconomic and cultural information. Thus resource surveys can provide comprehensive support for environmental

policy research, analysis, and implementation.

For years, relevant government agencies have gradually established databases of environmental monitoring as well as biotic and abiotic resources survey information. The EPA has already set up air and water quality monitoring networks to provide real-time monitoring information. With “environmental friendliness” as one of the main governance principles of Taiwan, the EPA has the following measures in place.

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I. Expanding monitoring and information services

1. Strengthening air and water quality monitoring information services

The EPA operates a total of 77 air quality monitoring stations, 31 manual PM_{2.5} monitoring stations, 13 photochemical pollution monitoring stations/vehicles, six PM_{2.5} chemical component monitoring stations, and 10 mobile monitoring stations/vehicles. The EPA also integrates and publicizes air quality monitoring data from monitoring stations of local environmental bureaus, state-run large scale enterprises and special industrial parks. A new version of the Taiwan Air Quality Monitoring Network was launched in April 2020.

In addition, air quality indexes (AQI) for the following four days are forecast three times a day and an early warning mechanism for offshore pollutants (dust and smog from China) is implemented from November to May of the following year to remind the public to take precautions.

Moreover, the EPA regularly monitors the water quality of rivers, reservoirs, tributaries of reservoirs, and groundwater throughout Taiwan as well as updates the water quality monitoring network to provide the public with visual-oriented and easily searchable water quality information services. All data is also put on the EPA's Open Data Platform and Environmental Info Push App for value-added applications.

2. Expanding environmental information integration and disclosure services

(1) Integrating environmental resource information
 The EPA is promoting the Environmental Resource Database Integration Plan by combining atmospheric, water, soil, forest, and ecological information, developing a diverse information service, and sharing environmental information across different fields through data exchange systems. The i-Environmental website has been set up to provide the public with a convenient way to access important local environmental information.



Taiwan Air Quality Monitoring Network



[Air Quality Monitoring](#)

[Target Monitoring](#)

[Air Quality Forecast](#)

[Code of Practice](#)

Announcement

Taiwan Air Quality Index

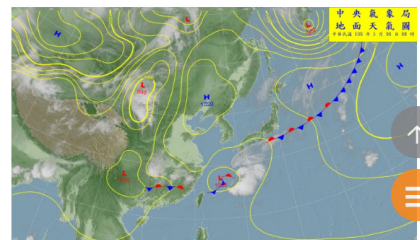
- AQI
- PM_{2.5}
- PM₁₀
- O₃
- O₃ 8hr
- Wind speed and direction
- Rainfall

- Good
- Moderate
- ▲ Unhealthy for Sensitive Groups
- Unhealthy



Weather Information

Weather Chart



The new version of the Taiwan Air Quality Monitoring Network (<https://airtw.epa.gov.tw/ENG/>)

(2) Improving the Open Data platform for environmental information

In line with the Open Data policy, the EPA continuously updates information submitted by the listed pollution sources and their relevant penalties on the Listed Pollution Source Data Search System for public inquiry. A mobile version of the system has been launched online. Moreover, the Environmental Resources Open Data Platform (trial version) was also launched in April 2020.

(3) Improving the Environmental Info Push App

To strengthen mobile environmental information services, the EPA launched the Environmental Info Push App which allows the public to browse real-time monitoring information, historical data, forecast data and so on. The app also provides air quality and many other warning notifications and environmental facility inquiry functions, including “excessive ozone alert notification”, “motorcycle periodic inspection notification”, “motorcycle periodic inspection station inquiry”, “public restroom inquiry” and so on.

II. Promoting the establishment and application of Internet of Things (IoT)

1. Setting up the environmental quality sensing IoT

The EPA has been setting up an environmental quality sensing IoT in Taiwan and building a smart operation system for a new generation of environmental law enforcement. The EPA set up air sensors across Taiwan and established a platform for sensor testing and certification as well as a smart environmental sensing data center. The goal is to achieve the vision of optimizing environmental protection via IoT. By the end of 2019, air pollution sensors had been installed in 7,000 spots to cover approximately 55 industrial or science parks and monitor the air quality of the environs of over 50,000 factories. The collected high-resolution sensor information can be used to pinpoint pollution hotspots and time periods after conducting big data analysis.

2. Establishing an environmental monitoring data platform and promoting its use in law enforcement

The EPA has completed the infrastructure for the Environmental Monitoring Data Center, which compiles sensor data, collects real-time air quality monitoring data of all levels, and simultaneously connects with Taiwan’s high-speed internet and computing centers providing innovative value-added applications.



📍 Environmental Resources Open Data Platform (trial version) (<https://data.epa.gov.tw/en>)

Future planning and objectives

(1) Short-term: Collecting and integrating surveying information, taking inventory of existing surveying and monitoring systems and fixing important deficiencies to build an integrated environmental resource database.

(2) Mid-term: Continuing to improve the system design, promoting integrated environmental resource monitoring and surveying system, disclosing information and applying big-data analysis technologies, developing environmental service information tools, issuing effective warnings, and promoting applications by external organizations and institutions.

(3) Long-term: Ensuring effective operation of the information management process, continuing to

develop the environmental monitoring and surveying system, collaborating with cross-organizational institutions to share data, and reflecting the overall environmental conditions, trends, and improvement results to provide references for future policy formulation.

In conclusion, the promotion of environmental monitoring and resource surveying requires systematic planning. In addition to meteorology, hydrology, geology and mineral resources, resource surveying also covers ecosystems and biological categories and groups. In the future, the surveying of these subjects will be incorporated along with the monitoring of air quality, rivers, groundwater, and marine water quality to build an integrated environmental resources monitoring system in Taiwan.

Climate Change

State-Run/Owned Enterprises Reach Excellent Carbon Reduction Results Under the EPA's Supervision

The EPA continues to cooperate with the Ministry of Economic Affairs (MOEA) on the inventory of carbon reduction achievement by state-run enterprises. Take Taichung Power Plant as an example, the air pollution emission of this plant in 2018 is 23% less than that in 2016, a result from implementing measures like reducing coal and increasing natural gas use, installing wet electrostatic precipitators on existing coal-burning power generators, improving coal pulverizers, updating gas desulfurization equipment, and improving catalytic denitrification equipment. It is estimated that the reduction in 2020 can reach 48%, which is better than the result from simply cutting down the coal use by 40%.

Besides Taichung Power Plant, the EPA emphasized that Dragon Steel Corporation (DSC) in central Taiwan has also completed projects, including enhanced coke oven gas desulfurization, installation of dust-collection equipment on coke conveyor system, and automatic temperature control projects in hot rolling mills. DSC will continue to work on projects to bring material piles indoors and improve control equipment.

Through pollution reduction inventorying, the EPA has promoted various air pollution prevention and control projects in state-run/owned enterprises, such as TaiPower, China Steel Corporation, China Petroleum Corporation, Dragon Steel Corporation

and China Ship Building Corporation. From 2016 to 2019, air pollution reduction of over 9,000 metric tons have been achieved. As a result of these and other pollution measures, concentrations of air pollutants in counties and cities throughout Taiwan were shown to be on a downward trend. In addition, in order to ensure that state-run/owned enterprises implement air pollution control and improvement tasks according to the planned schedule, the improvement tracking and review meetings originally presided by the MOEA are presided by both the EPA and MOEA as of the first quarter of 2020. This was to enhance the administrative supervision and reviewing capacity for strict monitoring of air quality improvement efforts.

Take the air quality in Taichung as an example, the EPA noted that it has seen significant improvement as the number of monitoring stations showing red



▲ EPA Deputy Minister Shen Chih-hsiu (second from the left) visits a state-run/owned enterprise to inspect progress on carbon-reduction.

alert days (average daily $PM_{2.5}$ concentration $\geq 54\mu g/m^3$) was lowered from 71 stations in 2016 to five stations in 2019, a 93% drop. And the monitoring data has shown the average $PM_{2.5}$ went down from $21.8\mu g/m^3$ in 2016 to $17.2\mu g/m^3$ in 2019, a 21% improvement. All show that Taiwan's air pollution control strategies have been effective leading to continual air quality improvement.

The EPA emphasized that coal reduction is not the only means to reduce air pollution, and it will continue to strengthen the promotion of different control measures under the authorization of the *Air Pollution Control Act* (空氣污染防治法). These measures include source control measures such as setting fuel composition standards, management and preventive measures such as improving fuel use permit and stationary source operation permit management, and end-of-pipe control measures such as reviewing and tightening emission standards for different industry categories and pollutant types. Along with these measures the EPA will also promote the best available control technologies and the designated pollutant reduction system for existing pollution sources in Class 3 control regions. The goal is to maximize emission reduction through multiple means and improve overall air quality. By reviewing control measures, the EPA also aims to integrate the capabilities of government agencies and strengthen the cooperation between the central and local governments.

Waste

Revisions of the *Management Regulations for Reuse of Common Industrial Waste* Preannounced

To enhance resource cycling and management, the EPA preannounced revisions to part of the *Management Regulations for Reuse of Common Industrial Waste* (共通性事業廢棄物再利用管理辦法) and the table in its Article 2. For example, the revisions added uses of waste plastics as solid renewable fuels (SRF) or SRF-related products and added clauses concerning the reuse management of food waste.

The EPA states that the revisions not only modified relevant clauses concerning the integration of the reuse check list into the industrial waste clearance plans in the administrative procedure, but also clearly defined that the cross-factory reuse by the same legal body is deemed as self-reuse considering the simple nature of common industrial waste and the available mature reuse technologies. The purpose was to

encourage enterprises to voluntarily install reuse facilities, emphasizing the responsibility of production sources, and effectively promote resource reuse.

To be in line with the policy of transforming flammable wastes into fuels, the revisions added that waste plastics can be reused as raw materials for solid renewable fuels and specified the combusting

equipment buyers of plastic waste SRF products must have when they are using the products as fuels (as mentioned in the table below). Also, the revised regulations clearly stipulate that reuse of waste plastics for food container uses must be compliant with the *Act Governing Food Safety and Sanitation* (食品安全衛生管理法).

With respect to the reuse of food waste, the revisions added soil improvement uses, and clauses regarding the operation and management of solids and leachate after solid-liquid separation treatment. Concerning the reuse of food waste as fuel materials or fuels for renewable bio-energy, the regulations also stipulate the uses and requirements for the digestate sediment and fluid produced from anaerobic fermentation.

▼ *Revisions of the Table in Article 2 of Management Regulations for Reuse of Common Industrial Waste*

No. 4 Waste Plastics	3. Qualifications required of reuse organizations (1) Factories: the revisions added "...When reused directly as auxiliary fuels...the factories must possess cement rotary kilns, fluidized bed boilers, large fluidized bed boilers (with steam output over 13 metric tons/hour), fuel-burning facility specifically for power generation, steel refinery furnaces or coke furnaces."
	4. Operation and management (4) When reuse products are SRFs and used as fuels, they must be sold to those who possess cement rotary kilns, fluidized bed boilers, large fluidized bed boilers (with steam output over 13 metric tons/hour), fuel-burning facility specifically for power generation, steel refinery furnaces or coke furnaces. (5) Reuse of waste plastics for food container uses must be compliant with the <i>Act Governing Food Safety and Sanitation</i> .

Air

Stricter Standards for Fuels of Land, Marine, and Air Vessels Effective in July

On 20 March, the EPA revised and announced the *Standards for Fuel Compositions of Mobile Sources* (hereinafter the Standards). The revision added standards for marine vessel fuels and aircraft fuels to the original standards named *Standards for the Composition of Automobile Gasoline and Diesel Fuels* and tightened the standards for gasoline benzene content and diesel polycyclic aromatic hydrocarbons (PAHs) content. The new standards, expected to take effect on 1 July 2020, are in line with and, in part, exceed the European and American ones.

The EPA noted that burning fuels leads to generation of pollutants like sulfur oxides and hydrocarbons and causes problems like odors, acid rain, and smog. Nations are increasingly tightening controls on mobile source fuel contents. Aiming to improve air quality, the EPA amended the existing standards and expanded the control targets so as to strengthen source control.

The newly added part concerning marine vessel fuels is aimed at the control of sulfur content. Fishing boats and other marine vessels are to switch from previous fuels with maximum 3.5% sulfur content to ones with

0.5% or lower sulfur content. This move improves air quality and shows Taiwan's efforts to voluntarily follow international conventions.

The *Commercial Port Law* (商港法) has since 2019 mandated that international shipping vessels are required to switch to fuels with 0.5% or lower sulfur content after entering international commercial port areas. The data of air quality monitoring stations in Keelung and Siaogang, Kaohsiung show a 29% and 45% drop in sulfur dioxide concentration in the air respectively between 2018 and 2019.

The Standards, after taking effect, will require all vessels and fishing boats to use fuels of 0.5% or lower sulfur content, and are expected to cut sulfur dioxide emissions by 5,229 metric tons. The EPA further estimated a 9% and 16% drop in sulfur dioxide concentration in the air of Keelung and Siaogang respectively between 2019 and 2020.

The EPA stated that it will conduct inspections on all vessels in industrial ports, special loading docks, fishing ports, international and domestic commercial ports and other waters. The operation will be jointly carried out with the Ocean Affairs Council, the Coast Guard Administration, and local environmental bureaus.

Although it is not a member of the International Maritime Organization (IMO), Taiwan voluntarily abides by the regulations concerning low-sulfur fuels under the International Convention for the Prevention of Pollution from Ships (MARPOL). This has not only significantly improved air quality but also helped Taiwan's ports maintain excellent reviews among its peers around the globe.

The Standards have also lowered the maximum sulfur content in aircraft fuels from 0.3% to 0.2%, 1/3 stricter than previously and surpassing the standards of many countries.

As for gasoline and diesel used in land transportation, the carcinogens benzene and PAHs that can affect the environment and human health are subject to tighter control. The maximum benzene content in gasoline has been tightened from 1% to 0.9%, and the maximum PAH content in diesel from 11% to 8%. The revision was to safeguard air quality and protect human health by reducing the risk of exposure to carcinogens.

The EPA stated that, with the *Standards for Fuel Compositions of Mobile Sources* taking effect in on 1 July 2020, CPC Corporation (CPC), Formosa Petrochemical Corporation (FPC), and other fuel providers will begin to provide products compliant with the latest standards. Users of all transportation vehicles are urged to use such products instead of recycled or mixed fuel products of unknown origins to help improve the air quality. Moreover, in an attempt to improve recycling technology and develop high-value applications, the EPA has been working with industry and academia on developing continuous waste tire devulcanization recycling technologies. These technologies can be used to produce high-quality recycled rubber suitable for making various rubber products. The next step is collaborating with factories for mass production to further diversify processing technologies, increase reutilization values, and create more green business opportunities.

Air

Adjustment of Seasonal Air Pollution Control Fee Rates Preannounced

To further improve poor seasonal air quality, the EPA intends to raise the seasonal fee rates for air pollution control. This economic incentive can encourage private and public premises to lower air pollutant emission when their operators voluntarily adjust production capacity during the seasons of poor air quality. Not only does this reduce air pollution fee expenditures, but also significantly improves air quality, creating a win-win situation for both the environment and economy.

Taiwan suffers seasonal poor air quality in the period from October to March. Due to the drop in the mixing layer height and the increase of northeasterly winds, air quality is under a greater influence from offshore pollutant transmission, poor dispersion of domestic emissions, and secondary pollutants created by ultraviolet photochemical reactions in the atmosphere, all leading to poor air quality.

The EPA explained that the adjustment raised the fee rates for the winter and the fall seasons (from January to March and from October to December) and lowered the rates for the spring and summer seasons (from April to June and from July to September). This was to enlarge the difference between the fee rates for the poor-air-quality seasons and the rates for the other two seasons. For private and public premises not subject to the basic fee rates, the fee rates for sulfur

oxides and nitrogen oxides were increased by NT\$1 to NT\$2.5/kg during the poor-air-quality seasons (winter and fall) and decreased by NT\$1 to NT\$2/kg for the other two seasons. The fee rates for volatile organic compounds (VOCs) were increased by NT\$5/kg during the poor-air-quality seasons and decreased by NT\$5.5/kg for the other two seasons.

Furthermore, the EPA changed the calculation for the baseline year emissions to motivate private and public premises to voluntarily redistribute production capacity to different seasons or raise the efficiency of control

equipments. The new calculation is based on the average emissions of the same season in the three years preceding the declaration. If the emissions of the premises during poor-air-quality seasons are less than those during the same periods of the baseline year, the premises are eligible to apply for a discount in their fee rates. The discount factor was also increased from 20% to 30% as a reward to motivate polluters to take voluntary control measures. This way the air quality will be further improved, and the goal of collecting air pollution fees will be reached.

Climate Change

Offset Principles for Increased Greenhouse Gas Emissions Caused by Development Activities Announced

On 27 March 2020, the EPA announced the *Offset Principles for Increased Greenhouse Gas Emissions Caused by Development Activities* (hereinafter referred to as the Principles). The *Environmental Impact Assessment Act* requires submission of environmental impact assessment (EIA) documents for certain development activities. Among these, the construction or expansion of factories, science parks taking up 50 hectares or more, thermal power plants using fuels other than natural gas, and combined heat and power (CHP) plants are required by the Principles to not only employ the best available technologies, but also offset the increased greenhouse gas (GHG) emissions caused by the activities.

Currently, GHG reduction work is jointly shared in six sectors: energy, manufacturing, transportation, residential, agriculture, and environment. Among them, the manufacturing sector should contribute to 50% of the reduction. The existing factories reduce emissions by switching boiler fuels, improving the manufacturing process, replacing old equipment, and using low-carbon fuels as alternatives. In 2018, the carbon intensity, which is the amount of carbon dioxide (CO₂) produced per dollar of GDP, has decreased by 41% compared to 2005. As for new development projects of science parks and factories that require EIA reviews due to the scale of the activities, developers are required to use renewable energy and formulate GHG reduction measures.

To promote GHG reduction, it has become more important to review the GHG emissions of development activities as a part of EIA, including their GHG reduction technologies and emission offset plans. Therefore, the EPA formulated the Principles to assist the EIA committee in reviewing and providing developers with a clear set of standards for offset planning. The three main principles include:

1. Developers shall propose the use of best available technologies based on the type and characteristics of the activities to achieve maximum energy efficiency with minimum emissions, and submit the information to be reviewed by the EIA committee.
2. Developers shall promise to offset the increased GHG emissions after the best available technologies are employed during the operation period in compliance with the Principles. The increased GHG emission offset ratio should be at least 10% annually and implemented for 10 years. The ratio is determined by the environmental impact assessment review committee.
3. Offsetting implementation procedure: after the development project passes the EIA review, the developer is required to submit a GHG offset plan. Offsets can be obtained through the GHG offset projects implemented in compliance with the *Greenhouse Gas Reduction and Management Act*, or through conducting emission reduction measures outside of the development activities. Examples of these measures include switching the fuel used in

the combusting equipment from coal or oil to natural gas or methane, improving or replacing existing boilers, using high-efficiency lighting or air conditioning equipment, and replacing old scooters with electric alternatives.

To encourage developers to provide financial or technological support for emission sources outside of their development activities, developers who help their affiliated enterprises that are not the developers of the activities being reviewed to implement emission reduction measures will receive 1.2 times the

reduction credits for the same amount of reduction. This is to promote different businesses to work together for emission reduction.

In addition, the EPA has established a GHG Reduction Offsets Website (<https://ghgtransaction.epa.gov.tw/Main/Index>) that updates the latest information on the issuance of reduction credits. The website also provides credit owners and seekers a platform to post their information to allow developers to find suitable partners and obtain offsets in a timely manner.

Inspection


Crackdown on Dumping of Waste Liquid Near Feitsui Reservoir

Feitsui Reservoir is the source of drinking water for the six million residents in the Greater Taipei Area. To protect the water quality and ensure drinking water safety, the Taipei Water Management Office was established under the Water Resources Agency of the Ministry of Economic Affairs. Much to the EPA's surprise, barrels of waste liquid were found in the Feitsui Reservoir catchment area. Fortunately, the EPA reacted in a timely manner and apprehended the offenders after a joint investigation with police and the prosecutor's office.

In September 2019, the EPA's Northern Branch of the Bureau of Environmental Inspection received a report from the Taipei Water Management Office regarding an illegal dumping of roughly 100 barrels of waste liquid in the Feitsui Reservoir catchment area. A team was sent to the disposal site and found 99 20-liter white plastic barrels of liquid waste, five 125-liter blue

plastic barrels of waste ink, and 20 large plastic bags of waste fabric. The inspection team immediately determined it as a severe dumping case and coordinated with the New Taipei City Government to transport the barrels to the Taipei Water Management Office. Subsequently, the EPA, the Taipei District Prosecutor's Office, and the Seventh Special Police



 *Illegal dumping of waste liquid in the Feitsui Reservoir catchment area.*

Corps conducted a joint investigation to crack down on the offenders.

The test result showed that a portion of the waste liquid contained copper that was nearly three times higher than the hazardous waste leaching standard. Copper poisoning can cause liver cirrhosis and kidney failure, and impair the digestive and nervous systems. Copper can also accumulate in animals and plants, causing green oysters and damaging the food chain and the environment. The dumping location was only three meters from the nearest river. Luckily, none of the liquid leaked out, or it could have seriously polluted the drinking water, endangering six million people in the Greater Taipei Area.

To find those responsible for the illegal dumping, the EPA's Northern Branch of the Bureau of Environmental Inspection conducted sample tests

on the liquid and determined that it was waste that contained heavy metals. By using high-tech equipment to restore the deliberately defaced labels on the barrels, the investigators were able to narrow down the source to printing plants in the Zhonghe, Yonghe and Xindian Districts. After six months of tracing, the EPA found roughly ten suspects who were paying a company in Tainan, which did not possess a waste clearance and disposal permit, to dispose of their waste. The company owner surnamed Lin along with an accomplice surnamed Luo dumped the waste liquid and fabrics in the nearby Feitsui Reservoir catchment area to save on the treatment costs. Other suspects involved in the case have been arrested and sent to the Taipei District Prosecutor's Office for further investigation. The offenders in this case can be sentenced to one to five years in prison and any illegal gains will also be confiscated.

Environmental Management

Disinfection Task Force Formed to Fight COVID-19

To prevent the spread of COVID-19 in crowded public venues during the Tomb Sweeping Festival holiday, the EPA and 22 local environmental protection bureaus mobilized a total of 731 people and disinfected 863 places, including 205 transit stations and 250 commercial spaces.

As the number of people under home isolation and quarantine continues to grow due to the COVID-19 pandemic, the EPA and 22 local environmental protection bureaus jointly established a disinfection task force on 25 March 2020. The task force focuses on disinfection of frequently visited public locations and neighboring areas, including: transit stations (MRT and train stations, bus stops and taxi stands), large scale commercial buildings (department stores, movie theaters and gyms), places that attract large crowds (grocery stores, traditional markets and commercial districts), schools and government buildings. The EPA also requires team members to report daily work progress to strengthen the supervision of the disinfection and ensure public safety. The task force has 3,030 participants, and has deployed 1,060 pieces of disinfection equipment and 342 disinfection vehicles.

The EPA also urges the management staff of the public premises to disinfect their facilities, especially frequently touched surfaces such as elevator

buttons, escalator handrails, floors, gym equipment, entertainment equipment, tables, chairs, phones, and public bathrooms (including faucets, doorknobs, toilet seats and flush levers). The EPA also suggests the management staff to assign a disinfection team and clean at least once a day (increase disinfecting frequency if there are more customers). The EPA also reminds the management personnel of all public premises to follow the stipulations in the management and maintenance guidelines set by the Central Epidemic Command Center (CECC) for public transportation, large scale businesses, and communities.

The disinfection task force only targets outdoor public areas. Hence, businesses are recommended to enhance the disinfection of their own business premises according to the business premise disinfection guidelines formulated by the EPA. Also, the EPA aims to fight the virus with public cooperation and hence reminds the public to follow the CECC's disease control measures.

Soil and Groundwater

Sediment Quality Test Results Database Established for Enhanced Sediment Management and Monitoring

The EPA has established the Sediment Quality Test Result Database website to make information on sediment quality in Taiwan more accessible to the public. The website provides regularly updated sediment data, which can be searched according to time, location and test item. It also gives brief explanations of current sediment management policies along with the related scientific background.

Since sediment management was covered by the *Soil and Groundwater Pollution Remediation Act* in 2014, the EPA has been assisting industry competent authorities to conduct sediment quality testing in all of the water bodies within their jurisdictions, including rivers, irrigation canals, lakes and reservoirs. By 2019, a total of 473 water bodies have been tested for sediment quality, with the test results reported to the EPA and published online. Results showing higher pollutant concentrations in water body sediments would prompt the EPA to investigate the potential causes. For example, in case of agricultural land pollution, the EPA could analyze water quality and pollutant concentration changes through time and space near the polluted site to find the potential

pollution sources.

In the future, the EPA will continue expanding the sediment quality database, closely monitor long-term sediment quality trends in Taiwan, investigate causes of high pollutant concentrations and review the sediment quality management system so as to ensure better quality of life for all.

For more information on sediment quality in Taiwan, please go to the Sediment Quality Test Result Database website: https://sed.epa.gov.tw/Sediments_Public/.

News Briefs

EPA Cooperates with Tzu Chi to Promote Environmental Sustainability

EPA Minister Tzi-chin Chang and the CEO of the Buddhist Compassion Relief Tzu Chi Foundation, Bo-Wen Yen, signed a memorandum of understanding (MOU) on environmental cooperation that focuses on waste prevention and the promotion of a resource-conserving lifestyle. The EPA and Tzu Chi will be cooperating in the promotion of environmental education, energy conservation, carbon reduction, recycling and reuse, circular economy, waste reduction, and a vegetarian diet. Through the signing of the MOU, the EPA aims to promote collaboration with the civil sector and encourage the public to reduce greed in their daily lives and conserve resources.

It has been 33 years since the EPA was founded and 30 years since Tzu Chi started participating in environmental protection. This year (2020) also marks the 50th anniversary of Earth Day. In the signing ceremony, EPA Minister Tzi-chin Chang mentioned that this year the EPA is holding educational events that advocate the concepts of "sufficiency in life" and "less is more", which can be applied to different environmental issues. With

these concepts, the EPA is reminding the public how overconsumption can cause a variety of environmental problems around the world. Moreover, conserving resources can not only give us a sense of mental contentment but also help sustain the environment.

Mask Littering Can be Fined up to NT\$6,000

As most people are wearing masks to protect themselves against the spread of COVID-19, mask littering has also occurred in many different cities and counties. Hence, the EPA is reminding the public that surgical masks fall under the category of general waste and should be properly discarded in regular garbage which is then handed over to garbage trucks. The EPA has raised the minimum fine for mask littering from NT\$1,200 to NT\$3,600 with a maximum fine of NT\$6,000 for repeat offenses.

The EPA has advised the local environmental bureaus to disseminate this information in public places that commonly see discarded masks (such as near entrances and exits of hospitals, MRT stations, train stations, HSR stations, and bus stations). The EPA has also urged the management personnel of public

premises to set up mask collecting bins on the premises. A total of 428 mask collecting bins had been set up on public premises by the end of March 2020.

Co-firing Ratio and Composition Standards for Fuels Used by Stationary Pollution Sources Announced

On 23 March 2020, the EPA announced the Co-firing Ratio and Composition Standards for Fuels Used by Stationary Pollution Sources (hereinafter referred to as the Standards), which stipulate the composition standards for bituminous coal, fuel oil, petroleum coke and primary solid biofuels used in public and private premises, and also the co-firing ratio limits for waste-derived fuels. The Standards also serve as a basis to approve permits for fuel use by stationary pollution sources. The purpose of the Standards is to strengthen air pollution control at its source and simplify the application procedure. Along with the end-of-

pipe emission standards of different industries that must be complied with, air pollutant emissions can be further controlled and reduced.

The EPA also announced the *Fuels Governed by the Co-firing Ratio and Composition Standards for Fuels Used by Stationary Pollution Sources* on the same day. Users of the aforementioned fuels are required to apply for a fuel use permit within a year of the promulgation of the Standards, except those who use petroleum products that are made by petroleum refining enterprises and meet the national standards or those whose planned total annual usage and actual usage is less than 500 kg (or liters). Enterprises that have already obtained a bituminous coal use permit and meet the fuel composition standards are allowed to apply for an extension and reissuance of a fuel use permit between three to six months before the original permit expires.



▲ As an example of fuel source control, bituminous coal must meet composition standards.

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