



Major Environmental Policies

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

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Environmental Monitoring

Monitoring Data Shows Decrease in Air Pollutant Concentration for Five Consecutive Years

The 2021 air quality monitoring data compiled by the EPA shows a downward trend of concentrations across all air pollutants for five consecutive years. The average number of days with Air Quality Index (AQI) of 100 or less, meaning in the categories of Good or Moderate AQI, exceeded 90% in 2020 and 2021. Also, there were fewer and fewer days with AQI above 100 (Unhealthy categories) in both years and zero days with AQI of 200 or higher (Very Unhealthy and Hazardous categories).

The EPA pointed out that the national PM_{2.5} concentration reached the goal of an average concentration of 15.7 µg/m³ for the whole of 2021 and the ultimate goal of an average annual concentration of 15 µg/m³ for 2020 to 2023, as set by the Executive Yuan-approved Air Pollution Control Plan. As for ozone, the average annual concentration continues to drop. Compared to recent years, in 2021 there was a significant decrease in hourly values of ozone over 120 ppb as well as a drop in 8-hour periods of ozone over 60

ppb. The number of station-days in 2021 that had an 8-hour ozone red alert showed an improvement of nearly 60% over the previous year.

The primary cause of poor air quality in 2021 was PM_{2.5}, mostly present from January to March. Further analysis reveals poor horizontal and vertical dispersions caused by meteorological factors such as stationary air masses and low altitude of the mixing layer. Furthermore, the Central Weather Bureau monitoring data displays an increase in hours

with low wind speed and a clear drop of rainfall from January to March 2021. Neither of these meteorological conditions helps disperse particulate matter, leading to increased accumulation of PM_{2.5} concentration.

The EPA noted that, since the revision of the *Air Pollution Control Act* (空氣污染防治法), it has worked on tightening control measures and evaluating 101 sets of relevant regulations as well as completing amelioration of multiple pollution sources ahead of schedule. For

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example, the number of Phase-1-to-3 large diesel vehicles taken off the road reached double the annual goal, and the goal of phasing out 1.2 million motorcycles has been achieved for Phase-1-to-4 motorcycles from 2020 to 2021.

For stationary sources, state-run enterprises have seen their pollution emissions reduced by 45% compared to 2016. Ninety-eight percent of their boilers listed for control have been improved.

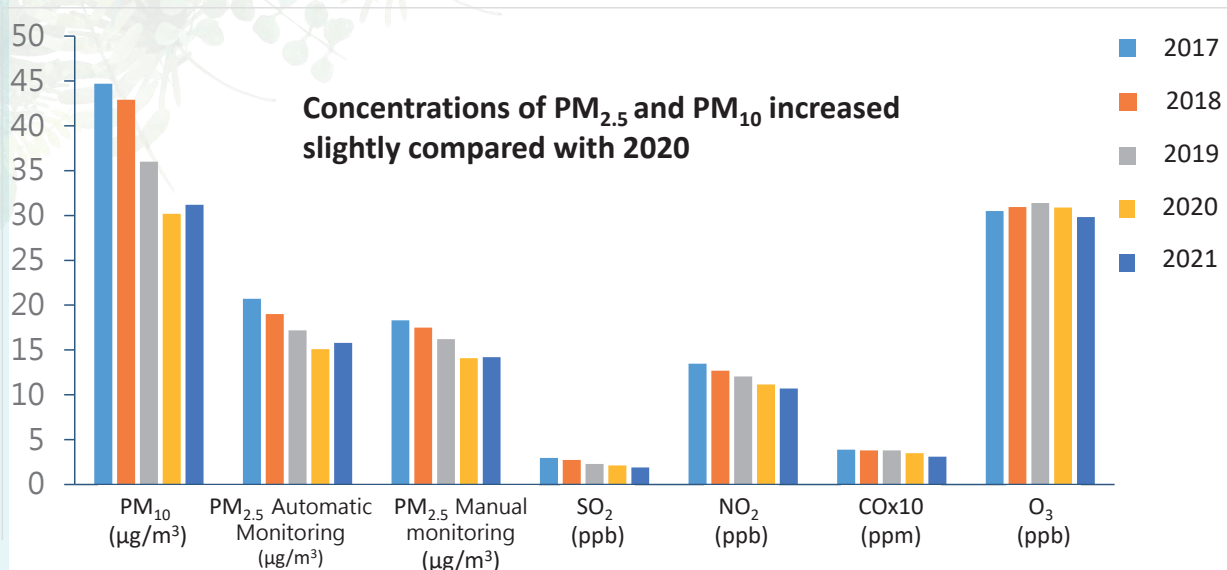
Other accomplishments include setting emission standards for hazardous air pollutants and tightening emission standards for the cement industry.

As for mobile sources, the results so far include the removal of 38% of Phase-1-to-3 high-polluting large diesel vehicles, 26% of old motorcycles, and assistance given to local governments in designating 15 air quality maintenance zones. For regulating fugitive sources, amended regulations strengthened

control of the restaurant industry and construction projects. The number of airborne dust incidents in Zhuoshui River and Kaoping River dropped from nine and eight in 2020 to four and zero, respectively, in 2021.

The EPA will continue to work with other central government departments and local governments to safeguard air quality and protect public health by reducing air pollution emissions.

Decrease in Air Pollutant Concentration for Five Consecutive Years



Recycling

EPA-ITRI Joint Efforts Create New Value from Used Lithium Batteries

In the midst of widespread electronic products, the electric car is on its way to going mainstream in the future. Based on the EPA's estimation, by 2025, Taiwan is looking at an annual output of 1,100 metric tons of waste rechargeable lithium batteries, potentially harmful to the environment if not properly disposed of. The EPA and the Industrial Technology Research Institute (ITRI) have jointly developed a new technology for waste battery disposal that is able, in low-energy-consuming and carbon-cutting ways, to extract precious metals for reuse with a tenfold increase in economic value over previous treatment methods. These metals can be reused for various purposes, creating a prospering circular economy.



➡ EPA and ITRI held a press conference on "High-value Application for Regeneration Technology of Used Lithium Batteries"

Taiwan. As electric motor vehicles continue to be actively promoted in Taiwan, the market for lithium cells booms, leading to a continual rise in demand for the relevant raw materials.

Domestic output of waste secondary lithium cells to reach 1,100 metric tons by 2025

Based on projected sales of consumer electronics and electric motor vehicles, it is estimated from calculations of product use cycles that the annual generation of waste rechargeable lithium cells in Taiwan will reach 1,100 metric tons by 2025. To keep precious metals within Taiwan's borders, the EPA began working with ITRI three years ago on early preparation and development aimed at achieving high-value reuse of precious metals and other valuable resources extracted from waste lithium batteries.

ITRI ran trials on extracting highly pure precursor compounds that are used as raw materials in anodes from waste lithium batteries. First,

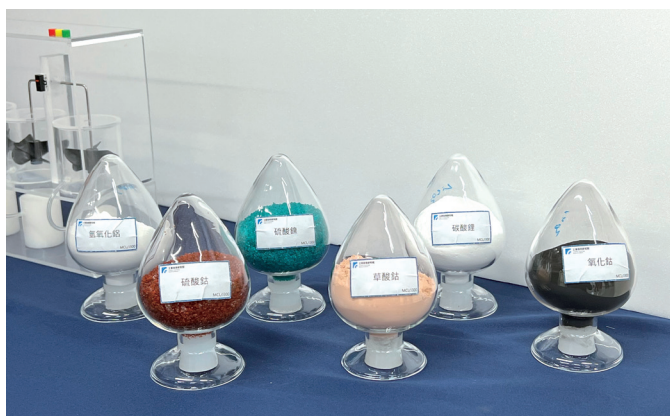
Turning waste batteries to gold in the face of a booming need for batteries

In light of the booming development of electric cars and the significant demand for lithium cell anode materials, the EPA collaborated with ITRI to extract more value and purer cobalt sulfate and cobalt oxide from the black powder produced after treating waste rechargeable lithium cells. Both cobalt compounds are needed to manufacture anodes for lithium batteries. The collaboration has lasted three years, with crucial technology developed, and has now reached the mass production trial stage.

The research project utilizes thorough physical screening, extraction and purification to separate and extract critical pure compounds. The end result means local enterprises can better dispose of the 1,100 metric tons of waste rechargeable lithium cells produced every year in Taiwan. Not only are environmental harms from waste lithium batteries prevented, but a complete specialized system is set up in advance for recycling and

resupply, enhancing the security of material supply for the industry.

Rechargeable lithium cells and batteries can be recharged and used repeatedly and are widely used in consumer electronics such as cellphones, cameras, laptop computers, and tablets because of their high energy density, long life cycle and low discharge rate. There is also a rising use of electric powered transport devices such as electric cars, electric scooters and electric-assist bicycles that rely on lithium batteries to store energy. All precious metals contained in these cells, including lithium, cobalt, nickel, manganese, and copper have to be imported into



➡ The finished products through newly developed technology, one of them being cobalt oxide (first from right)

other metals such as iron, copper, and aluminum are effectively removed from mixed anode and cathode powders via precise physical sorting and screening. Then different reducing agents are added to compare the ratio of extracted cobalt ions with a separation and purification process via adjustment of acidity and basicity. This way, anode precursor materials are extracted from the mixture powders, separated and purified, with a cobalt extraction rate of up to 98%. The extracted cobalt is made into cobalt oxide via thermal reduction in high heat, and the finished products have a cobalt content above 71.06 wt% and impurity content below 300 ppm, which complies with the specification for industrial-grade raw materials. The last part of the research project is a mass production trial and certification of renewable products.

New technology optimizes waste disposal and creates economic profits tenfold

ITRI explained that by using this technology, the mixed anode and cathode powders, which are of lower value, can be disposed of via separation and purification and turned into high-value cobalt oxide. Cobalt oxide is worth ten times the value of the powders. Other metals can also be extracted and reused through the same process, which increases overall economic benefits and contributes to a higher recycling rate. Aside from continual assistance for domestic enterprises for technological enhancement, other results include active facilitation of the technology through further signing memorandums with responsible enterprises.

The EPA's statistics show that in 2021 a total of 600 metric tons of rechargeable lithium cells from electric cars and motorcycles, consumer electronics, and other products using such batteries were recycled, accounting for 15% of all recycled waste batteries that year. There are 8,000 electric cars on the street of Taiwan and 500,000 electronic motorcycles have been sold, taking the electric vehicle market to an economical scale of millions. Thus the amount of waste rechargeable lithium cells in Taiwan is estimated to reach 1,100 metric tons by 2025. All six local treatment plants have a combined annual capacity of roughly 2,200 metric tons, capable of handling all the rechargeable lithium battery waste generated.

The EPA pointed out that in the past, the majority of the mixed anode and cathode powders, which contained precious metals, were exported after being treated with the shredding and disposal technology then available in Taiwan. The "black powder" left could only be used as an auxiliary material in steel refineries and was worth merely NT\$80/kg. However, with the newly developed technology involving prior sorting, screening and purification, the cobalt oxide alone is currently worth NT\$800/kg, a tenfold increase in value over the previous unrefined black powder. This price is estimated to increase rapidly depending on global demand and political and economic circumstances in production regions. Cobalt oxide is a compound required in battery production and the chemical industry, and will be reutilized in the manufacture of lithium batteries. In

this way, valuable resources can be kept in Taiwan, and the high-value recycling and reutilization also makes a circular economy a reality.

Urging the public to utilize the 20,000 recycling stations across Taiwan

Prospectively, the EPA noted that the participation of all citizens in properly recycling waste batteries is required even with such a low-polluting, high-value treatment technology in place. There are now over 20,000 waste battery recycling stations across Taiwan, including at hypermarkets, supermarkets, chain convenience stores, chain retail shops for cleaning products and cosmetics, convenience stores in traffic hubs and stations, retail shops for wireless communications equipment, telecommunications stores, recycling trucks of cleaning crews, and recycling stations in villages and neighborhoods.

The public is reminded to recycle the batteries inside toys, laser pointers, calculators, remote controls, automatic massage pads, telecommunications products and all sorts of rechargeable household appliances. Rechargeable batteries must be insulated with electrical tape on both ends to prevent fires from short circuits. There are designated locations and recycling channels for motor batteries from electric cars and motorcycles. When lithium cells are taken out of electric vehicles during maintenance or when being scrapped, maintenance or repair shops or vehicle recyclers must collect and take them to waste battery recycling or disposal enterprises.

Waste Management

Enterprises with Excellent Recycling Performance Awarded for Improvements and Innovations in the Industry

The Office of Resource Circulation was set up in July 2021 to gradually promote full recycling so as to maximize recycling and minimize waste disposal. Meanwhile, well-performing enterprises are to be chosen as models to encourage other enterprises in Taiwan to actively participate in recycling. This helps reduce resources lost from linear production or service patterns and creates new economic value by incentivizing private manufacturers and service industries to participate in the circular economy. Model examples set by the well-performing enterprises also encourage colleagues to upgrade their technology or use renewable materials, ultimately facilitating resource recycling in Taiwan.

The EPA has been acknowledging enterprises for their excellent performance in resource recycling since 2018, to date selecting a total of 75, with 36 receiving the two-star award, the highest honor, and 39 the one-star award. All of them are committed to striving for environmental sustainability and revival. Under active governmental effort to facilitate a circular economy, the awarded enterprises are all eager to make changes, upgrade technologically, conduct innovative research, and share their successes to create growth and development in all of Taiwan's industries.

The EPA expressed that the award recipients have all proven to be outstanding in their own way over the years. For instance, the Heping Plant of Taiwan Cement has formed a closed circular system encompassing the industrial harbor, the Heping Power Plant, and the cement plant. Pipeline connections allow raw ingredients, fuels and wastes to be shared among the three sites. The harbor supplies raw ingredients needed for cement production to the cement plant and ships out the finished products, resulting in lower carbon emissions. All of the coal ash from the power plant is transported to

the cement plant as a component for cement.

Guantian Black Gold has transformed waste shells of water caltrop, a primary regional plant eaten as food, into high-value products. Through carbonization, shells are turned into coals, used in objects such as filters in air purifiers, bio-charcoal for agricultural purposes, or products that absorb moisture and reduce odors. The heat generated from the carbonization process can also be recycled. In addition, the weak-base water used to clean the shells can be used in blue dyeing afterwards. Local communities

have collaborated with different industries to develop business opportunities, such as organizing interesting local tours that also promote the idea of recycling.

Last but not least, PackAge+ provides a business model of circular services, giving consumers better and environmentally friendlier options for online shopping. Packaging materials from online shopping platforms are rented and shared among online stores, consumers, and return channels. These materials, made of recycled plastic bottles and waste glass, can be used repeatedly over 50 times, drastically cutting down



↑ Enterprises with excellent recycling performance awarded

the use of single-use packaging materials.

Via green designs, upgraded renewable technology, increased recyclability, and modified

manufacturing processes, more and more enterprises are actively participating in circular rentals, working to extend the life cycles of their own products, and utilizing renewable and recycled raw

materials. Accomplishments of these awarded enterprises have been compiled into a book to share their processes in advocating and facilitating resource recycling.

Air
Quality

Smuggled Coolants Destroyed to Protect the Ozone Layer

To protect the ozone layer and deter unscrupulous enterprises from smuggling illegal coolants, the EPA has since 2001 commissioned the MOF's Customs Administration (CA) to destroy all the confiscated smuggled coolants. Annual subsidies are provided to the CA for all costs needed for the destruction. On 21 December 2021, the CA completed the bidding process to commission qualified disposal enterprises in the destruction operations, which are expected to destroy another 75 metric tons by the end of 2022.

Coolant ingredients like hydrochlorofluorocarbon, chlorofluorocarbons (CFCs), HALONs, and other fully halogenated CFCs all damage the ozone layer, and are listed for control by the Montreal Protocol. They are not easily combustible, but with a stable and toxin-free chemical characteristic, they're usually stored in steel containers.

Confiscated ones are normally placed in the customs' warehouse. In recent years, the EPA and the CA have had multiple discussions on the operations and also together taken inventory in the warehouse, listing coolants in containers that are in poor status as the first batch to be destroyed. On 25 January 2021, a statement was issued based on the Montreal Protocol to announce that rotating kilns, cement kilns, and electric arc furnaces were to be used to destroy smuggled coolants. Currently, there are four industrial waste disposal enterprises that



📍 Tons of refrigerant cylinders

meet the operation standards.

Coolants have different physical characteristics than wastes. Most of them are in gas form, so regular incinerators need to be outfitted with special equipment to destroy them. Before 2004, Renwu Plant of Formosa Plastic Co., which manufactured coolants itself, was commissioned to destroy smuggled ones. The operation ceased after the plant sold its furnace. In the following years, the EPA sought help from disposal enterprises abroad and gave up because they charged NT\$1 million per metric

ton. And enterprises in Taiwan were unwilling to be commissioned, considering the major technical requirements and difficulty in facility renovations. The operation was put on hold as there was a small amount of smuggled coolants stored.

To build up domestic disposal capacity, the Industrial Technology

Research Institute (ITRI) has since 2011 been commissioned to develop the technology needed. Trial burns to destroy coolants were subsequently conducted with rotating kilns, arc furnaces, and cement kilns, with all processes compliant with the air pollution control regulations. The EPA will keep collaborating with the CA and coordinating with relevant institutes as well as qualified disposal enterprises to destroy smuggled coolants. Meanwhile, efforts are ongoing in the development and transfer of necessary technology, with assistance for

the CA in regular inventory and inspections on how proper and

safe the steel containers are in the warehouse. The goal is to speed

up the destruction of confiscated coolants.

Recycling

First Label Issued to Certify Products Using Marine Debris as Government and Corporations Work to Maintain a Clean Ocean

On 27 December 2021, the EPA issued the Marine Debris Circular Product Label to certify 13 products developed by four enterprises, including Horng En Plastics, BoReTech, NICE Enterprise, and Taijei Precision Co. This first batch of the issued Marine Debris Circular Product Label marks its beginning and displays local enterprises' environmental efforts. Furthermore, it shows the resolve of both the government and enterprises to keep the ocean clean.

In 2021, the EPA opened a new chapter in Taiwan's endeavor toward reusing marine debris with the launch of a new clothing series, in which 96% of the contents are waste plastic bottles collected from the ocean. It successfully demonstrated the joint efforts of industries, government, academia and researchers, and international certification organizations on promoting the circular use of marine debris and a certifying mechanism for tracking sources. Afterward, a set of guidelines to promote the product label were announced in stages after 9 April 2021 as references for enterprises in their application and the EPA's evaluation and management. On 3 June, the design of the label's logo was approved by the Intellectual Property Office and then registered. The whole process is to encourage corporations to actively participate in marine environmental protection, reduce waste and resource consumption, and consider the possibilities of reusing marine debris to make products.

First ever to have been certified with the Label, the four enterprises come from both the upstream and downstream of the industry. Horng

En Plastics, the recycling company, utilizes bottle caps, buoys, fishing nets, and plastic barrels and boxes. BoReTech Reusable Technology produces reutilized materials with waste plastic bottles. NICE Enterprise, the leading household product manufacturer, uses recycled marine debris to make containers as the packaging of its popular products. And lastly, Taijei Precision Co., a new enterprise, manufactures floors and wooden materials with mixtures of marine debris, agricultural wastes, and fishing wastes.

EPA Deputy Minister Hung-Teh Tsai noted that the 13 products from the four corporations are the first ever in the nation to be certified with the Label. Since 2021, the EPA began finalizing each and every detail in the certification process, hoping to ensure Taiwan's reutilized products that use marine debris aligned with the world. With the certification regulations in place, enterprises in Taiwan that passed the strict certification process will be able to put their products on the global market. Likewise, similar foreign products can enter Taiwan once obtaining the Label. The Label helps increase consumers' willingness to

purchase a product and ultimately expands the business opportunities for reuse products and their usage. Deputy Minister Tsai elaborated that the enterprises certified this time are those that have been developing products with recycled marine debris long-term and therefore are highly supported by consumers. Moreover, products of other multiple manufacturers are currently undergoing the certification process, which when approved will be issued the Label by the EPA. Manufacturers in the relevant industry can also form a strategic alliance among themselves, helping enterprises achieve technological breakthroughs by learning about others' needs and brainstorming. This way, applications of reutilized materials can be expanded.

The verification procedures for the first products certified with the Label were conducted by TÜV Rheinland and the Metal Industries Research and Development Centre, which also produced certification statements and reports to ensure fairness and objectivity of the entire process. Participation of certifying institutions, both foreign and local, further displays how serious all fields have taken in the first year of the Label's launch.

Soil &
Groundwater

First Taiwan-Thailand Soil and Groundwater Environmental Technology Cooperation Forum Marks Commencement of Net Zero Cooperation

The EPA invited the Pollution Control Department of the Ministry of Natural Resources and Environment of Thailand to co-host the 2021 Taiwan-Thailand Soil and Groundwater Environmental Technology Cooperation Forum on 24 December 2021. Held both physically and virtually, the forum saw hundreds of experts and scholars from both sides enthusiastically exchange on the experience of soil and groundwater policy, investigation, and regulation, laying a good foundation for future cooperation. EPA Minister Tzi-Chin Chang, acting representative of the Taipei Economic and Cultural Office in Thailand Wei-Min Hsu, and acting representative of Thailand Trade and Economic Office Sunh Arunrugstichai were specially invited to give remarks.

In the opening address, Minister Chang stressed that soil and groundwater protection would be an important task for Taiwan and Thailand in the future since this issue was closely related to sustainable development and food supply. As to the soil and water pollution caused by industrial development, Taiwan has gradually accomplished the improvement of polluted sites and agricultural lands through the implementation of the *Soil and Groundwater Pollution Remediation Act* and relevant administrative regulations. The interaction between Taiwan and Thailand in the area of environmental protection was interrupted due to the pandemic, and the forum marked the commencement of the cooperation between the two sides through video conferencing for the first

time, laying the foundation for the development of future technological exchanges and strengthening further cooperation.

The EPA stated that 2021 marked the 20th anniversary of the establishment of its Soil and Groundwater Remediation Fund Management Board. And through international soil and groundwater technological and academic exchanges, it would continue to promote international accreditations to share capacities with its Thai partners and face climate change issues together for sustainable development. Deputy Director-General of the Pollution Control Department, Ministry of Natural Resources and Environment of Thailand Preeyaporn Suwanaged stated that the topic of soil and groundwater

protection is essential in current global exchanges, and the laws and ideas of both sides could be shared through this forum.

Acting representative Wei-Min Hsu said that environmental protection and sustainability are of great importance for Taiwan and Thailand. Taiwan possesses comprehensive regulations, technical excellence, and ample experience in soil and groundwater protection. With the world facing the challenges of climate change, Taiwan can share its experience and technical know-how with other countries worldwide. Acting representative Sunh Arunrugstichai said that the two parties could exchange experience and sustainable development technology and seek further cooperation through this forum.

Environmental
Education

2021 Asia-Pacific Environmental Education Forum Deepens Environmental Education Effects in the Region

The three-day 2021 Asia-Pacific Environmental Education Forum was successfully concluded on 2 December 2021. More than 500 partners from 63 countries worldwide participated in this event, the first large-scale international environmental education exchange organized jointly by the Taiwan and US EPAs. Conducted through a mix of online and physical activities to circumvent difficulties caused by the COVID-19 pandemic, the forum was held to deepen the effects of environmental education in the Asia-Pacific region and strengthen the cooperation network in the future, starting a new chapter of environmental education in the region.



More than 50 environmental education experts and scholars from 14 countries and different fields served as speakers and interlocutors in the forum. Crossing regional barriers with inspiring dialogues, they shared practical experiences from their respective countries. They showed how to solve environmental and social issues such as climate change, friendly agriculture, marine conservation, global citizenship, biodiversity, and environmental justice through environmental education. They also tried to use the forum as a platform to promote environmental education exchanges and cooperation in the Asia-Pacific region, enhance the effects of education, and expand people's leadership in

environmental issues and actions.

Since this year happened to be the 10th anniversary of the promulgation of Taiwan's *Environmental Education Act*, the EPA specially organized a comprehensive discussion session on "Taiwan Environmental Education and Prospects" after the first day of the global online forum. Domestic experts, scholars, practitioners, and partners from the public and private sectors were invited to review the problems and difficulties encountered by the government, schools, enterprises, communities, and non-governmental organizations in the promotion of environmental education and proposed solutions with the prospect to re-innovate,

evolve and deepen the promotion. At the end of the forum, special emphasis was placed on inspiring youth leadership. The younger generations tend to have a high awareness and keen observation on environmental issues. Young talents should be cultivated, encouraged, and provided with opportunities and rights for participation and decision-making. Tsung-Yung Liu, Director of the Department of Comprehensive Planning of the EPA, said that the COVID-19 pandemic had changed the world and challenged previous thinking and lifestyle, and the promotion of environmental policies and education should also evolve with time.

Environmental Monitoring

Central and Local Governments Jointly Build Smart Sensing Internet of Things (IoT)

The water quality-sensing IoT created by the EPA recently detected 23 enterprises that illegally discharged wastewater, leading to the issuance of NT\$20 million in fines. The water quality sensors, jointly deployed by the EPA, the Irrigation Agency (IA) and 13 local environmental bureaus can pinpoint pollution hotspots and popular discharge hours by using data detected every minute and analysis of AI big data. All of the above have helped raise inspection efficiency.

The EPA reported that it collaborated with the IA to install water quality sensors in irrigation ditches in Gangshan, Kaohsiung. Having determined potential pollution hotspots and popular discharge hours, inspectors were able to crack down on electroplating factories that illegally rerouted discharges within a month after the deployment of sensors. A fine of NT\$9.935 million was issued, and the authorities also tracked down illegal gains worth of NT\$2.85 million. Now the water quality sensing IoT has grown more mature, with sensors deployed in over 50 watersheds and 15 industrial zones across Taiwan via the EPA's continual advancement of sensing technology and onsite trials conducted by local governments. For such achievements, environmental bureaus of Taoyuan City, Taichung City, Tainan City, and Yunlin County were invited to share their applications and experiences in utilizing these sensors in a press conference.

Taoyuan Environmental Bureau discovered that lye tanks and storage wells of factories in industrial zones were broken and resulted in wastewater overflowing into rainwater ditches. Thanks to early detection, disaster was averted. Factories were fined NT\$365,000 and ordered to make improvement within two weeks. Taichung Environmental Bureau staked out highly potential pollution hotspots and discovered illegal discharges from factories at certain hours. Water quality tests showed a pH of 11.9 and suspended solids exceeding the limit by 24.7 times, leading to a fine of NT\$1.482 million. For Yunlin Environmental Bureau, water quality sensor data were analyzed and used to crack down on factories in industrial zones that rerouted wastewater discharge into rainwater discharge outlets. Finally, Tainan Environmental Bureau fully utilized sensor data to pinpoint suspected pollution areas and discovered a leather factory that rerouted its discharge as well as

discharge from a waste disposal plant exceeding the standards by five times. Each was fined NT\$1.9 million and NT\$430,000, respectively.

The EPA stressed that the water quality sensing IoT combines local governments' installation capacity via connection and coordination among different central authorities. Limits of conventional monitoring by manpower are overcome as warnings in real-time can be issued through automatic water quality sensors thus greatly enhancing the effects of smart environmental management. In the future, the EPA will keep pushing for smart sensing and AI management in water supply plants and wastewater treatment plants to increase values across different industries through collaboration between the public and private sectors. The goal is to use technology to enhance environmental quality by integrating water quality sensing IoT in every aspect of life.

Chemicals

Inter-ministerial Cooperation to Strengthen the Life Cycle Management of Hazardous Substances

On 30 November, the EPA held a seminar titled "2021 National Chemical Substances Management Policies and Guidelines, Action Plans, and Achievements" in Taipei regarding the operation and management mechanism of hazardous substances (products) that the people of Taiwan are concerned about. Government agencies, including the finance ministry, transportation and communications ministry, labor ministry, economics ministry, science and technology ministry, interior ministry, and the EPA were invited to attend and share their management actions and achievements concerning chemicals in different stages of their life cycles such as manufacture, importation, usage, storage and transportation and based on topics that are divided according to 11 responsibility areas.

The EPA stated that, in accordance with the *National Chemical Substance Management Policy Guidelines* approved by the Executive Yuan in 2018, to periodically review the

implementation results of relevant ministries under the framework of the policy guidelines and to strengthen communication and exchanges with all sectors, the EPA had held seminars annually since

2018 setting different chemical substance management topics for the ministries to share their implementation results and give feedback to build consensus and establish a basis for cooperation.

This way, the ministries can cooperate to implement the objectives and the vision of the *National Chemical Substance Management Policy Guidelines and Action Plans*.

The EPA stated that the ammonium nitrate explosion at the port of Beirut last August, where more than 200 people perished, more than 6,500 injured, and more than 300,000 people displaced from their homes, has

attracted much international attention. In the wake of the event, Premier Su Tseng -Chang swiftly ordered relevant ministries to review the effectiveness and implementation of regulations and measures pertinent to hazardous waste (products) management. In particular, risks and their corresponding preventive measures should be assessed from the perspectives of possible illegal, unconventional and irregular criminal acts in order to safeguard

the security of people. As a result, the seminar emphasized the subject of "Improving the Management Mechanism of Hazardous Substances (Products)" in the hope of consolidating the regulations and measures of relevant agencies and examining the management breakpoints that can be mutually reinforced. This way, many potential risks can be detected and their preventive measures applied prior to them becoming disasters.




↑ 2021 National Chemical Substances Management Policies and Guidelines, Action Plans, and Achievements seminar

General Policy

New Measures Effective Starting January 2022

The new measures that came into effect on 1 January 2022 include: controlling cooking smoke from restaurants, setting up a registration system for kitchen waste cooking facilities, tightening controls for labeling of chlorpyrifos, building an integrated waste vehicle recycling platform, and recyclers care program.

Items	Descriptions
Measures controlling cooking smoke from restaurants effective January	Newly opened restaurants up to a specific scale must install cooking smoke control equipment and conduct proper operations and maintenance. Moreover, restaurants in New Taipei City and Taipei City are subject to stricter regulations and therefore are to comply accordingly to safeguard the health of the public and staff.

Items	Descriptions
A registration system set up for kitchen waste cooking facilities	<p>The EPA has finished setting up a registration system for kitchen waste cooking facilities. Pig farms using kitchen wastes as feeds, more than 400 in total, are required to upload all essential information and kitchen waste cooking status up to the EPA's cloud system. It used to be that all data had to be entered manually. Starting 2022, enterprises can upload by just scanning the specific QR Code of each, checking boxes on whether to cook or not, and then clicking "send." It is no longer needed to manually type or install relevant software, streamlining the whole process with fewer typing errors.</p> 
Controls tightened for labeling of chlorpyrifos, an environmental agent	<p>In line with gradually limiting the use of chlorpyrifos globally, controls are strengthened for its use as an environmental agent in sprays. Warnings on labels are put in place to limit its use in outdoor environments only to lower indoor exposure and risks. For products (including manufactured and imported) that are environmental agents containing chlorpyrifos, produced after 1 January 2022, warnings that prohibit use in households and indoor environments are to be put on labels of regular environmental agents. Warnings that allow use in outdoor environments only are to be put on labels of special agents. All aim to remind consumers to use environmental agents with caution.</p>
The integrated waste vehicle recycling platform	<p>From 1 January 2022, the EPA is working with the Ministry of Transportation and Communications (MOTC) and the Ministry of Finance (MOF) to promote recycling waste vehicles. With one click on the keyboard, people are now accessing the system that integrates five services, including recycling vehicles.</p>
Recyclers care program	<p>In 2022, individual recyclers listed by local environmental bureaus are offered higher-than-market purchasing prices per unit as an incentive. For example, the price is raised to NT18/kg to purchase waste paper containers. Onsite collection at individual storage sites is also available to recyclers in need of assistance. A total budget of NT\$126.26 million has been appropriated in 2022 for the program with monthly maximum subsidy of NT\$5,000/person. A one-year microinsurance, with a maximum premium of NT\$500, is provided to each recycler eligible for the care program. It is to prevent financial downfalls of their families, should accidents occur to recyclers during their work.</p>

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Publisher

Tzi-Chin Chang, Minister

Editor-in-Chief

Shyn-Wei Chen

Executive Editors

Shiuan-Wu Chang; Tsu-Shou Cheng; Miao-Ling Chen;
Shaowen Chang; Ken Lee; Jason Hoy

For inquiries or subscriptions, please contact:

Major Environmental Policies

Office of Sustainable Development
Environmental Protection Administration
83, Sec. 1, Zhonghua Rd., Taipei 100, R.O.C. (Taiwan)
tel: 886-2-2311-7722 ext. 2216
fax: 886-2-2311-5486

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