

# Major Environmental Policies

June 2023

## 1. Feature Article: Using Smart Technology to Safeguard Environmental Quality

To safeguard environmental quality, the EPA actively promotes comprehensive smart governance. In addition to utilizing AI analysis of big data to identify potential pollution hotspots, the EPA extensively employs technological tools to systematically inspect and regulate these hotspots and manage affected areas. Moreover, regional governance is implemented in collaboration with county and city environmental bureaus and local district prosecutors' offices under the Ministry of Justice. This allows mobilization of police and investigative authorities in joint inspections that target major environmental pollution sources and aim to crack down on environmental crimes.

### **Collaboration between law enforcement, prosecution, and the EPA exposes unscrupulous operators**

With the rapid advancement of technology, the integration of intelligent tools into environmental law enforcement has greatly strengthened the ability to safeguard environmental quality with increased efficiency and effectiveness. From 2018 to April 2023, the Central Branch of the Bureau of Environmental Inspection (hereinafter referred to as the Central Branch) has sent a total of 34 legal entities and 454 individuals involved in violations of environmental laws in major crimes to criminal prosecution. Among them, 34 legal entities and 446 individuals have been formally charged. Comprehensive evidence gathering and law enforcement facilitated by the collaboration platform between law enforcement, prosecution and environmental protection authorities have resulted in a high conviction rate of these unscrupulous enterprises. Criminal proceeds were also confiscated, leading to a total fines of more than NT\$2.08 billion as environmental justice was upheld by making offenders pay the price for polluting the environment.

In the early days, environmental pollution by unscrupulous enterprises included indiscriminate emissions of black smoke, wastewater discharge, and improper waste disposal without installing pollution prevention or control facilities. These violations were often detected and reported by members of the public, environmental groups, and volunteers before environmental authorities followed up with persistent and patient investigation. Usually pollution sources could be successfully identified. However, enterprises gradually developed sophisticated methods to evade detection and resorted to tactics invisible to the naked eye. Such practices include releasing wastewater and exhausts via underground pipes, clandestinely burying wastes in excavated pits, or using qualifications for waste clearance and recycling as a front to camouflage illegal waste disposal activities. These illicit practices greatly undermined the environmental authorities' inspection efforts.

### **Inspections and law enforcement with smart technology and high-tech instruments**

To cope with unscrupulous enterprises' diversified and organized polluting activities and environmental crimes, the EPA has enhanced joint investigation techniques adopted by environmental and judicial investigative authorities. Additionally, analysis with smart technology and technology-enhanced law enforcement are employed to counter the increasingly sophisticated violations, effectively uncovering illicit behavior and gathering related evidence. Specifically, investigation staff utilizes big data and algorithms to analyze and identify high-risk enterprises, detect abnormal data, and target pollution hotspots. High-tech tools are then employed in

inspections and law enforcement in order to better deter emissions of pollutants and improper waste disposal. Some the frequently used devices include water quality sensors, handheld X-ray fluorescence spectrometers (XRF) with ion exchange resin, remote water quality monitoring facilities, resin time-lapse capsules, infrared thermographic cameras, gas imaging devices, and drones. Utilization of these devices is now common practice to investigate waste disposal sites and calculate disposal quantities. From 2018 to April 2023, the Central Branch used technological tools to reduce the burden on the environment brought by illicit activities, lowering volatile organic compounds (VOCs) annually by an amount equivalent to the emissions of 332,930 two-stroke motorcycles. Annual discharge of toxic wastewater into rivers has decreased by approximately the capacity of 16.8 standard swimming pools, and annual waste disposal by approximately the carrying capacity of 48,037 35-ton tractor-trailers.

The EPA emphasizes that due to Taiwan's well-connected transportation network, many remote locations in the central region, easily accessible via convenient transportation, have become popular sites for illegal disposal of wastes from Northern Taiwan. In light of this, the Central Branch utilizes big data environmental analysis, including vehicle trajectories and images, to track movements of suspicious vehicles. Once unlawful activities are detected, technology is employed regardless of day or night, rural or urban areas, to gather evidence for environmental law enforcement and promptly halt illegal dumping of waste. Moreover, if any unscrupulous enterprise attempts to secretly discharge wastewater or exhausts during the early morning or nighttime to avoid detection, it is bound to fail. Now as evidence is collected through technology, no illicit trace can escape the watchful eye of the law. If any illegal behavior is discovered, offenders may face criminal charges and hefty fines with confiscation of their ill-gotten gains. Enterprises are urged to refrain from challenging the law.

#### **Collaboration with civic organizations for resource integration and stronger regional prevention of illegal activities**

For future environmental law enforcement, the Northern, Central, and Southern Branches of the Bureau of Environmental Inspection will together continue towards regional governance using smart technology, AI analysis with big data, and other technology to crack down on unlawful activities. The EPA calls upon enterprises to strengthen self-regulation and become proactive partners in safeguarding the environment. Another focus is to enhance cooperation and collaboration with county and city environmental bureaus, as well as prosecutors, police, and investigative authorities. In addition, the EPA will further keep harnessing the forces of civic organizations to integrate resources and strengthen the regional joint prevention system so as to effectively prevent any unlawful pollution activities and safeguard environmental quality.



EPA introduces the application of technological tools in law enforcement



Chief Prosecutor Ming-Ren Wang (second from right), Prosecutor Pei-Ying Chou (first from right), Nai-Chun Yeh, the Central Branch of the Bureau of Environmental Inspection (third from right), and the Golden Circle Award winners

## 2. Special Prize Added in Environmental Map Competition to Promote Net-Zero Transformation to Youngsters

The EPA and the Ministry of Education (MOE) are jointly holding the fourth competition for creative environmental maps, in order to encourage elementary school students to create their own unique maps. Students from the second to sixth grades are welcomed to team up and have until 1 December to sign up for the competition. Not only will school-age children get to work with classmates, parents, and teachers to step out of their own homes and explore surrounding

**areas, but this year a special prize on transformation toward net-zero emissions has been added to the competition so as to align with the government's recent policies. Two submitted works will be selected from each age group for this category. All maps centering on climate change or sustainable use of energy and resources have a chance to win the special prize.**

The previous three competitions received good responses, leading up to a total of 538 submissions in the fourth competition this year. The submissions show the full range of issues in Taiwan from different perspectives and through the eyes and minds of children. The event welcomes pupils who will be in second to sixth grade this September to compete. There will be two age groups, middle classmen and upper classmen. Participants are allowed to team up with students from different schools so that children of different ages and schools can exchange ideas on environmental topics. With parents and teachers accompanying them to observe living environments, children will learn more about various environmental issues in their daily lives and use their enhanced understanding to make maps.

Submitted maps are to incorporate one of the five environmental education themes, which are environmental ethics, sustainable development, climate change, disaster prevention and rescue, and sustainable use of energy and resources. There are also manuals on how these maps are to be created to enable competitors to express their motives and messages behind making individual maps, as well as to express more reflections about caring for one's own living environment.

All prizes in sum total up to NT\$200,000. A total of 50 winners will be picked out, including the top three submissions, five for excellence, and two nomination teams out of the middle classmen group and the upper classmen group, with the top winner receiving gift vouchers worth NT\$30,000. Moreover, two participants will be selected from each age group for the prize category, transformation toward net-zero emissions, newly added this year in accordance to recent relevant policies. Submitted maps whose themes are climate change or sustainable use of energy and resources have a chance to win the prize. The aim is to urge school-age children to align their daily living practices with environmental policies by learning about relevant policies and in the future even participate in policy making.

To help students, parents, and teachers better understand the making of environmental maps, from July to November this year a series of promotional events were held, including meetings, workshops, and an exhibition of the winning maps from last year's competition. Attendees were able to learn about net-zero policies and the competition via fun games, talk with winning teams from the previous competitions, and tour the sites on which the previous winning maps were based. In addition, the exhibition helped more children, parents, and people learn about the map creators' motives, choice of themes, and on-site investigations. The goal was to inspire potential participants and help them understand the basics of making environmental maps.

Mother Nature is the best teaching material in a child's journey to grow and learn. Making environmental maps allows kids to visit their communities, explore new people and things, discover unexpected wonders, and naturally identify with and love their neighborhoods. The EPA sincerely invites parents and children to embark on environmental education and environment-friendly practices in their daily lives by signing up for the event, exploring, creating, and sharing. Detailed information on competition rules and relevant events can be found on the event website at <https://www.environmentalmap.com.tw/>.



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### 3. EIA Standards Set for Offshore Wind Power Development

In response to renewable energy development goals pushed under Taiwan's energy policies, the EPA has established relevant administrative measures to enhance the efficiency of environmental impact assessments (EIA) in order to develop green energy while ensuring compliance with environmental protection requirements. In addressing concerns from various sectors about the efficiency of the EIA process, the EPA has set specific targets to complete EIAs within 6 months to 1 year. Additionally, measures have been initiated to improve relevant administrative procedures, such as progressively converging initial review opinions and limiting the initial review meetings to a maximum of three.

On EIAs for offshore wind power, in 2016 the EPA compiled an assessment report on the zonal development for offshore wind farms in order to solicit opinions. This report identified common environmental issues related to offshore wind farm development and proposed corresponding strategies to serve as a guiding principle for subsequent development planning and EIAs. As for the third EIA stage of offshore wind power development, the EPA drew from past review experiences to establish assessment criteria and guidelines for ecological investigations. These regulations serve as a reference for planning of offshore wind power development and help support the advancement of national policies on energy transition.

The EPA will keep actively conducting EIAs for renewable energy development projects. With an efficient process, the EPA aims to minimize environmental concerns, thoroughly achieve the goals of conducting EIAs, and effectively maximize results from EIA processes while facilitating green energy development.

### 4. Revisions Double Fines for Vehicle Noise at Night

To expand protection of a peaceful nighttime environment, the EPA has issued the revised penalty criteria for violations of the *Noise Control Act* (噪音管制法). Specifically, during nighttime hours and designated periods during the day, motor vehicle noise that impairs tranquility of the lives of others will be subject to increased penalties. The initial violation will incur a fine of NT\$6,000, double the previous amount. Repeat offenders will face escalating penalties up to maximum of

**NT\$30,000. Additionally, those found to exceed the noise control standards through inspections will be directly fined the statutory maximum amount of NT\$3,600.**

The EPA explained that currently over half of Taiwan's county and city governments have made announcements in accordance with the *Noise Control Act* Article 8, designating specific time periods and places in which use of "uncertified exhaust pipes" on vehicles constitutes an activity that disturbs the peace and quiet of others. Moreover, five counties and cities have issued announcements declaring it a disruption of tranquility for vehicles to be driven on roads after having "any modifications to exhaust pipes that were originally inspected and certified by the competent authority for noise inspections". Violators of these regulations may be fined between NT\$3,000 to NT\$30,000 under the *Noise Control Act* Article 23. In addition, amendments have been made to increase fines for violations in order to further deter noisy motor vehicle activity during nighttime and in areas requiring special tranquility (including schools, libraries, and medical institutions). Also, those found to exceed the noise control standards through inspections will be directly fined the maximum amount specified under the *Noise Control Act* Article 26.

Furthermore, the EPA also suggests that counties and cities can plan joint cross-county inspections and enforcement during the most active period of noisy vehicles in the summer. Other counties and cities without relevant announcements about disturbances to public peace are advised to refer to the practices of the aforementioned counties and cities and promptly list certain behaviors as disturbances of tranquility. Such behaviors include using uncertified exhaust pipes and driving vehicles on the roads with modifications to the exhaust pipes that were originally inspected and certified by the competent authority for noise. This comprehensive approach aims to effectively curb the generation of noise caused by vehicles with modified exhaust pipes.

Other than the *Noise Control Act*, the *Road Traffic Management and Penalty Act* (道路交通管理處罰條例) Article 43 also stipulates penalties for car drivers who remove mufflers or make noise by other means. Offenders may be fined between NT\$6,000 to \$36,000 and immediately prohibited from continuing to drive the vehicle. If they violate the regulation again within one year, their driver's license will be suspended for six months. It is recommended that county and city governments strengthen cooperation between environmental authorities and the police in enforcement of the law and carry out special inspections targeting periods and areas where noisy vehicles are frequently present, in accordance with the aforementioned laws.

To effectively control the modification of exhaust pipes at the source, in 2019 the EPA implemented a certification system to regulate noise generated from modified exhaust pipes. Exhaust pipes are assigned specific codes and registered under this system. Modification enterprises are encouraged to have their products undergo certification testing, and a qualification code is issued and stamped on the exhaust pipes once they pass the inspection. So far, 159 sets of certified exhaust pipes have been approved, and all information is made publicly available on the "List of Vehicles Compliant with the *Noise Control Standards* (噪音管制標準)" (<https://www.artc.org.tw/carmode>). This allows vehicle owners to freely access and download the information.

Moreover, the EPA is continuously reviewing and refining the certification system for exhaust pipes regarding aspects such as label designs, management of modification enterprises, registration of modifications, and clarity of identification. Also, the Ministry of Transportation and Communications (MOTC) has been advised to look into regulations on road safety and require vehicles that switch to modified exhaust pipes to use certified ones and undergo registration to document the switch with the competent authorities for motor vehicles. Via a comprehensive approach that combines source management, end-of-pipe controls, and law enforcement with acoustic photography, the central and local authorities are able to collaborate and effectively control noisy vehicles, maintaining the tranquility of everyone's living environments.





Environmental protection personnel cooperate with the police to conduct roadside inspections of vehicle noise

## 5. Adjusted Air Pollution Fees Provide More Incentives to Lower Emissions

To further lower air pollutant emissions during periods of poor air quality, on 30 June 2023 the EPA announced the amended control fee rates for air pollution emissions from stationary sources, which took effect on 1 July 2023. The amendments include widening the gap in seasonal fee rates, revising the calculation method for flare stack fees, adjusting the fees for dioxins, heavy metals, and volatile organic compounds (VOCs), and initiating collection of new air pollution fees for three VOCs. The purpose is to increase benefits from reducing both conventional and harmful air pollutants through enhanced economic incentives, which are expected to cut approximately another 9,000 metric tons of air pollutants annually.

Focuses of amendments to the control fee rates for air pollution from stationary sources are as follows:

### 1. Expanding seasonal fee rate differentiation and reducing incentives

The revisions have raised the first and fourth-quarter fees for periods of poor air quality as well as incentives for air pollution reduction efforts. This aims to reduce air pollutant emissions through economic incentives, encouraging enterprises and public and private premises to adjust production capacity or enhance proper operation of pollution control equipment during periods of poor air quality.

### 2. Facilitating enterprises to voluntarily reduce use of flare stacks

Under the revisions, fee rates and calculation methods for flare stacks have been adjusted and further integrated into the control standards for VOC emissions. Air pollution control fees regarding flare stacks are now calculated based on factors such as the annual cumulative times of usage, operating hours, and exhaust gas flows, urging enterprises to actively cut use of flare stacks.

### 3. Adjusting and adding rates for emissions of hazardous air pollutants

Based on the concept of risk to health, the amendments have adjusted rates for dioxins, heavy metals, and harmful VOCs and introduced new air pollution fees for three harmful VOCs, namely vinyl chloride, 1,3-butadiene, and acrylonitrile. These measures aim to encourage enterprises to reduce emissions of hazardous air pollutants.

The EPA stated that this fee revision primarily impacts industries involved in producing electricity, steel, petrochemicals, cement, panel manufacturing, and others. It is hoped that while pursuing economic development, these industries will take greater responsibility to reduce air pollution.

Through economic incentives, the revisions strive to push enterprises to lower air pollution emissions and expenditures on air pollution control fees by using measures such as proactively adjusting production capacity, installing pollution control equipment and enhancing facility efficiency during periods of poor air quality.

The EPA further explained that, when announcing the draft revisions to the fee rates on 1 February 2023, it had initially planned to introduce new emission categories and rates for high-emission entities. The formulation process originally relied on emission data analysis from 2015 to 2019. However, the EPA later considered that proactive implementation of air pollution control measures in recent years had resulted in an approximate 30% drop in stationary-source pollution emissions in 2021 in comparison with those in 2016. This shows a disparity exists between the level of originally planned emission categories for high-emission entities and their actual emissions in recent years. This is due to accumulative, overall efforts to tighten and evaluate over 110 sets of regulations since the amended *Air Pollution Control Act* (空氣污染防制法) was promulgated on 1 August 2018. Therefore, the EPA reanalyzed the threshold for categories of high-emission entities based on the latest data.

The EPA reminded enterprises that the regulations mentioned above will take effect as of October 2023, during which public and private premises declare their control fees for air pollutants from stationary sources for the third quarter of 2023 (July to September 2023). More detailed information concerning fee rates are available on the EPA website at (<https://oaout.epa.gov.tw/law/index.aspx>).

**Table: Revised control fee rates for air pollutants from stationary sources (sulfur oxides and nitrogen oxides)**

Types of pollutants	Fee rates			
	Class 2 control zones		Class 1 and 3 control zones	
	Second and third quarters	First and fourth quarters	Second and third quarters	First and fourth quarters
Sulfur oxides	NT\$7/kg	NT\$11/kg	NT\$8.5/kg	NT\$13/kg
	NT\$5/kg	NT\$9/kg	NT\$6/kg	NT\$10/kg
	NT\$450/quarter	NT\$450/quarter	NT\$450/quarter	NT\$450/quarter
Nitrogen oxides	NT\$8/kg	NT\$12/kg	NT\$10/kg	NT\$14/kg
	NT\$6/kg	NT\$10/kg	NT\$7.5/kg	NT\$12/kg
	NT\$450/quarter	NT\$450/quarter	NT\$450/quarter	NT\$450/quarter

## 6. Environment-friendly Chicken Farms Contribute to Achieving Net-Zero Green Living

Egg-laying chickens can also live in luxury coops. Unlike traditional chicken egg farms where odors and disease transmission are prevalent, modern chicken farms adopt spacious environments, comfortable surroundings, and advanced monitoring equipment. They also install eco-friendly equipment for air, waste, and wastewater treatment, ensuring both environmental



**protection and animal welfare and providing sustainable conditions for livestock and poultry. From pollution reduction at source to embracing circular economy practices, these farms strive to work with others to achieve the goal of net-zero green living.**

Traditional chicken egg farms are characterized by open spaces where chicken manure is difficult to collect and process, leading to the generation of unpleasant odors. These farms face challenges such as outbreaks of diseases like avian influenza, unstable egg production rates, and are often considered as facilities to be avoided by neighboring communities. As a result, environmental authorities frequently receive complaints about the foul odors associated with these farms.

Most modern chicken farms adopt controlled environments, effectively preventing the spread of diseases. Indoor temperature control helps avoid excessive water intake by chickens, reducing the water content and weight of chicken manure, which, in turn, reduces the generation of odors and indirectly decreases fuel consumption and carbon emissions during waste transportation. Additionally, the use of nesting boxes ensures that eggs remain uncontaminated by feces, facilitating a reduction in water usage during the cleaning and sorting stages. Chicken manure can be recycled as organic fertilizer, reducing the need for chemical fertilizers and promoting sustainable agricultural practices. Moreover, wastewater from egg washing is treated and either recycled or used for irrigation, promoting water conservation and resource circulation. Through environmental protection measures concerning waste, air, and wastewater, the unpleasant odors around the chicken coops are eliminated, and the overall environment becomes clean and comparable to that of modern technology industries, showcasing the effectiveness of environmental management.

The EPA calls on livestock and poultry farmers to embrace the concept of circular economy, minimizing resource wastage and maximizing resource reuse. They are encouraged to enhance the living conditions for the livestock, improve animal welfare, and actively contribute to environmental protection efforts to achieve sustainable development goals.



**EPA Minister Tzi-Chin Chang (right) listened to the explanation of hen breeding and environmental protection facilities by the owner of Green Grass Farm Technology**

## 7. Industry, Government and Academia Share Ideas at the Forum on Resource Circulation Transition

On 30 June 2023, the EPA held a forum on resource circulation titled "Transforming Resources, Advancing towards Sustainability." The forum was presided over by former director and honorary professor at National Cheng Kung University, Chang Juu-en. In the forum, EPA Minister Tzi-Chin Chang engaged in dialogues with various enterprises while the Director of the Office of Resource Circulation, Lai Ying-Ying, presented the future vision, goals, strategies, and key projects of the Resource Circulation Administration. Leading companies from six major sectors also shared their experiences on how they transform waste into resources to promote resource circulation. They also exchanged and interacted with others on innovative ideas and directions for promoting resource circulation.

To enhance the understanding of enterprises and the public regarding resource circulation policies and promotion directions, and to foster exchanges that encourage enterprises to adopt resource circulation practices and transform their resource utilization methods, the EPA organized the forum on resource circulation titled "Transforming Resources, Advancing towards Sustainability."

Director Lai Ying-Ying pointed out that in order to promote "zero waste through resource circulation," the Resource Circulation Administration has initiated the formulation of the *Resource Circulation Promotion Act* (資源循環促進法). Through legislative changes, the government aims to transform the concept of waste management, enhance resource recycling, and improve overall waste management. The waste management will involve five stages: waste reduction, reuse (without changing forms), recycling (changing forms), energy recovery (such as solid recovered fuel), and proper disposal. These stages are accompanied by five major promotion strategies: green design for waste reduction at source, resource reutilization through recycling, establishing smooth circulation networks, innovation in technology and systems, and value-added treatment of waste.

"We should not be freeloaders on the environment, and we must not burden our descendants with debt," said Mr. Ker-Fu Lu, Vice General Manager of Taiwan Cement. He shared "Cement Industry Resource Recycling - A Case Study of Taiwan Cement" and emphasized the company's goal to become a participant in the circular economy and a contributor to urban cleanliness. Taiwan Cement aims to achieve this through three core business areas: low-carbon cement and new construction materials, waste management, and sustainable development of new energy.

Ms. She-pin Hung, General Manager of Fwusow Industry, presented "Establishing and Operating a Circular Agricultural System." She said the company has a mission to "provide the public with safe and healthy food," and is committed to realizing the vision of "developing a green enterprise."

"The business model of resource circulation is the industrial value of the circular economy," said Mr. Hui-ching Yeh, Head of the Carbontech & Management Group at YFY Inc. He shared the "Resource Circulation Business Model." He presented how the company created a resource circulation and high-value circular economy industry chain based on agricultural, paper, energy, water, and carbon flows. By promoting effective resource circulation, the company is pioneering a high-value circular economy and YFY Inc.'s comprehensive circular system, achieving sustainable production.

Mr. Lai Huai-ren, Senior Division Manager at UMC, shared "Waste Reduction and Resource Circulation in the Semiconductor Industry." Through measures such as process technology improvement and raw material reduction at the source, they are striving towards achieving the goal of zero waste. He also suggested that the government could leverage big data and AI technology to proactively recommend potential matches or collaborations, forming "the large

leads the small” partnerships or industry chains to accelerate the pace of resource circulation. Mr. Xie Ji-Ye, Chairman of Feng Yu United Engineering, shared "Construction Circulation and Low-carbon Transformation." He emphasized the use of the 5R approach (Reduce, Reuse, Recycle, Recover, and Remanufacture) to plan for circular construction and consider the entire lifecycle of buildings to achieve zero waste in construction. The company focuses on energy-efficient and precise structural design in buildings, the repeated use of temporary facilities and system templates to minimize waste, and the development of durable, recyclable, and renewable building materials to achieve waste reduction, resource minimization, and carbon reduction goals. EPA Minister Tzi-Chin Chang expressed gratitude to the leading companies for their introduction of key practices and achievements in resource circulation and for their sharing of valuable experiences and suggestions with the participants. He emphasized that among the 12 strategies for achieving net-zero emissions by 2050, "Zero Waste through Resource Circulation" is a crucial one. The goal is to maximize the utilization of resources and minimize waste, treating all reusable materials as resources that should be recycled or reused. Minister Chang stated that if recycled products cannot compete with raw materials, there is a possibility of them being discarded. In such cases, the government must intervene by implementing regulations, providing incentives, or offering technological guidance to facilitate their integration into the recycling loop. During the transition towards resource circulation, enacting specialized laws is a critical step, and establishing a dedicated Resource Circulation Administration under the Ministry of Environment would provide a greater driving force to realize these efforts.



The participants of the forum on resource circulation titled “Transforming Resources, Advancing towards Sustainability”

## 8. Public Urged to Eliminate Stagnant Water as Dengue Fever Spreads in Southern Taiwan

As of 27 June, the Taiwan Centers for Disease Control (CDC) under the Ministry of Health and Welfare announced a total of 72 indigenous dengue fever cases. Notably, in addition to a sudden surge of 54 cases recorded in Tainan City during the week of 20-26 June, Kaohsiung City has

**reported its first domestic case of the year. The EPA urged the public to enhance the clearing of stagnant water containers both indoors and outdoors and to take self-protection measures to interrupt the transmission of dengue fever.**

The EPA stated that based on statistics from the CDC, neighboring Southeast Asian and South Asian countries are still experiencing a peak in dengue fever cases. As Taiwan's borders remain open for travel, indigenous dengue fever cases in Taiwan have also increased and surpassed the number of cases during the same period in previous years. Additionally, the recent high temperatures and afternoon showers in various regions have led to the accumulation of stagnant water in outdoor containers, creating favorable environments for the breeding of disease-carrying mosquitoes. This consequently elevated the risk of dengue fever transmission. The EPA urged the public to remain highly vigilant and not underestimate the situation.

The EPA has already held six meetings involving central government agencies to inspect breeding sources within their respective jurisdictions, as well as to review and coordinate dengue fever breeding site cleaning and spraying efforts by environmental protection agencies in 2023. The EPA urged all central government agencies to continue implementing environmental management and breeding source elimination within their jurisdictions, setting an example for the public. At the same time, the EPA has been supervising local environmental protection bureaus to strengthen public education and community mobilization for the implementation of the "Patrol, Dump, Clean, and Brush" measures. Additionally, relevant agencies will be encouraged to increase the frequency of inspections in their respective areas of jurisdiction, in order to ensure breeding source elimination, clean up littered environments, and prevent the proliferation of disease-carrying mosquitoes.

To enhance local resources and improve dengue fever prevention and control capabilities, the EPA has allocated a subsidy of NT\$7,000,810 to the Tainan City Environmental Protection Bureau. This funding is for emergency procurement of epidemic prevention-related supplies, including medications, spraying equipment, lawn mowers, and hiring temporary personnel to carry out dengue fever breeding source elimination tasks. The EPA's Southern Region Environmental Management Center dispatched personnel on 28 June to assist the Tainan City and Kaohsiung City environmental protection bureaus in their dengue fever prevention and control efforts.

The EPA once again reminded the public to wear long-sleeve and light-colored clothing when going outdoors, use government-approved mosquito repellents, and properly use environmental agents. It is essential to reinforce efforts in eliminating stagnant water from containers such as buckets, tanks, jars, pots, tires, and flowerpots around homes. Working together to maintain environmental hygiene can effectively prevent further spread of dengue fever.





Gutter disinfection to combat Dengue fever mosquito breeding grounds

## 9. Lulin Background Station Seen by International Community as Crucial in Monitoring Asian Air Quality

The geographic location of the Lulin Atmospheric Background Station operated by the EPA is unique, as it enables the observation of cross-border transmission of pollutants. During autumn and winter, pollutants from China can impact Taiwan due to winds from the northeast, while in spring, high-level westerly winds carry pollutants from biomass burning in Southeast Asia, affecting Taiwan's air quality. Lulin station has been continuously monitoring greenhouse gases and air pollutants for 16 years, since its establishment in 2006. It has also joined various international monitoring networks, accumulating valuable data and research results. This has greatly contributed to understanding international background air quality pollution trends and facilitating regional environmental monitoring cooperation. The station plays a crucial role as a significant site for observing changes in atmospheric composition and climate in the western Pacific region.

The Lulin Atmospheric Background Station has been invited to join the Carbon Cycle Greenhouse Gases (CCGG) network operated by the United States National Oceanic and Atmospheric Administration (NOAA). It is also the only high-altitude background station in East Asia among the eight stations in Asia. Additionally, the station is part of the Federated Aerosol Network (FAN), Solar Radiation Network (SolRad-Net), and Aerosol RObotic NETwork (AERONET) managed by the US National Aeronautics and Space Administration (NASA). Moreover, it is involved in the Atmospheric Mercury Network (AMNet) under the US EPA and the National Atmospheric Deposition Program (NADP). The station actively participates in multiple international large-scale experiments and collaborates on long-term observations with Germany and Japan.

Lulin station is located at the boundary of Chiayi and Nantou counties, inside Yushan National Park. Situated at an altitude of 2862 meters in the free troposphere, it conducts long-term monitoring of greenhouse gases, radiation flux, atmospheric mercury, aerosols, and other air pollutants.

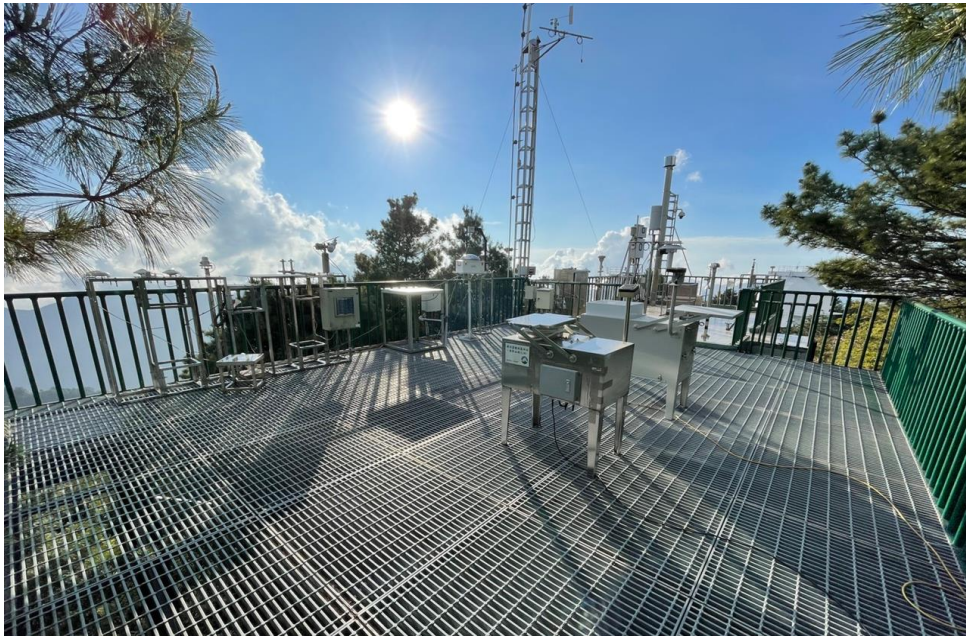
According to the CCGG network, the data from this station has been referenced and published in approximately 60 internationally renowned academic journals. Among them, ten publications have appeared in prestigious journals such as Environmental Science & Technology (ES&T), Science of the Total Environment (STOTEN), and Atmospheric Chemistry and Physics (ACP). This not only

demonstrates the international status and importance of Taiwan's background monitoring but also establishes the station as a crucial international platform for related scientific research. Before 2006, there was no background monitoring data on greenhouse gases and air pollutants in the East Asian region. The establishment of Lulin station allows for the assessment of the impact of cross-border pollution transmission in East Asia. Monitoring data from 2006 to 2022 revealed that the summer greenhouse gas background values at Lulin station are consistent with those at the Mauna Loa background station in Hawaii (MLO). However, due to Taiwan's particular geographical location, Lulin station is more susceptible to foreign pollution influence. During spring, biomass burning in Southeast Asia contributes approximately 3.4 ppm of CO<sub>2</sub> concentration and around 29.5 ppb of methane (CH<sub>4</sub>) concentration measured at Lulin station. Long-term data indicates an accelerating growth trend in greenhouse gas concentrations in Asia, highlighting the crucial role of Taiwan's Lulin station as a long-term observer of regional greenhouse gases and air quality.



**Aerosol monitoring instrument jointly built by Taiwan EPA and NASA**





Lulin Atmospheric Background Station has been monitoring regional greenhouse Gases from 2006 to now.

## 10. Implementing Online Packaging Reduction Regulations to Reduce Waste and Save Costs from 1 July

The EPA announced in the early part of 2023 the *Targets and Measures for Restrictions on Internet Shopping Packaging* (網際網路購物包裝限制使用對象及實施方式), which have been put into effect as of 1 July 2023. The aim is to reduce the usage of packaging materials in online shopping at the source, thereby lowering the overall amount of online shopping packaging waste.

According to the regulations, all internet retailers are prohibited from using packaging materials containing polyvinyl chloride (PVC). Paper packaging materials must contain at least 90% recycled paper, and plastic packaging materials must incorporate at least 25% recycled materials. Additionally, medium-sized businesses with a capital of NT\$50 million or more, or with 300 or more self-owned pickup points, must also comply with product packaging weight regulations. Large businesses with a capital of NT\$150 million or more, or with 500 or more self-owned pickup points, must further adhere to annual reduction targets and result reporting requirements. Various e-commerce operators have responded to the regulations by making adjustments to their packaging materials and operational procedures, all working together to reduce waste. Taking the well-known company PChome as an example, it has optimized the system for matching products with suitable boxes during shipping, implemented additional weight checks for packaging, and uses smaller boxes instead of bigger ones. They have also optimized their shipping system to consolidate products from different warehouses into a single shipment, thus reducing space wastage. Moreover, they now use 100% recycled paper pulp to make their cardboard boxes, minimize printing, and avoid bleaching the boxes. PChome stated that increasing the usage ratio of the volume of boxes and reducing external packaging also enhances loading efficiency and reduces the cost of delivery trips, thereby achieving a reduction in carbon emissions. Some companies have also redesigned cardboard boxes and cushioning materials, as well as designed and adopted tape-free cardboard boxes. The EPA recently invited the environmental

protection bureaus to discuss and establish inspection principles. They will initiate on-site inspections of shipments from centralized warehouses and prioritize large-scale enterprises as the initial targets for inspections before the end of the year.

Since 2019, the EPA has been implementing the *Online Shopping Packaging Reduction Guidelines* (網購包裝減量指引). In comparison to 2019, where the average weight of packaging materials for each online purchase was 0.322 kg, by 2022, it had decreased to approximately 0.248 kg, representing a weight reduction of about 23%. This year, the EPA is introducing the *Online Shopping Packaging Reduction Guidelines 2.0*(網購包裝減量指引2.0) and it is expected that after its implementation until 2030, a target of nearly 50% reduction in packaging material weight will be achieved.

Through legislation, the EPA aims to enable businesses to provide consumers with convenient services while simultaneously improving standard packaging and shipping processes. Complying with the regulations will help businesses to reduce the costs of packaging material procurement and logistics, offering consumers a new model of online shopping services. The ultimate goal is to achieve the effect of reducing packaging waste in e-commerce, leading to "less packaging for shipping, reduced packaging waste, and less environmental burden."

**Table: Targets and Measures for Restrictions on Internet Shopping Packaging**

Appearance	Target	Restrictions
Material	All internet retailers	<ul style="list-style-type: none"> <li>x No PVCs are allowed</li> <li>● paper primary color preference</li> <li>● 90% or more recycled paper</li> <li>● 25% plastic recycled ingredients</li> </ul>
Packing	Medium-sized or above	<p>The weight ratio of the package shall comply with the following specifications:</p> <p>250g-1kg: &lt;40%</p> <p>More than 1 kg and less than 3 kg: &lt;30%</p> <p>More than 3kg: &lt;15%</p>
Year-by-year	Large businesses	<p>Shall comply with one of the following-</p> <p>1. Average reduction rate of packaging weight</p> <ul style="list-style-type: none"> <li>&gt; 25% in 2024</li> <li>&gt; 30% in 2025</li> <li>&gt; 35% in 2026</li> </ul> <p>2. Usage of reusable boxes (bags)</p> <ul style="list-style-type: none"> <li>&gt; 2% in 2024</li> <li>&gt; 8.5% in 2025</li> <li>&gt; 15% in 2026</li> </ul>

## 11. Biodegradable Plastic Disposable Tableware Banned from 1 Aug 2023

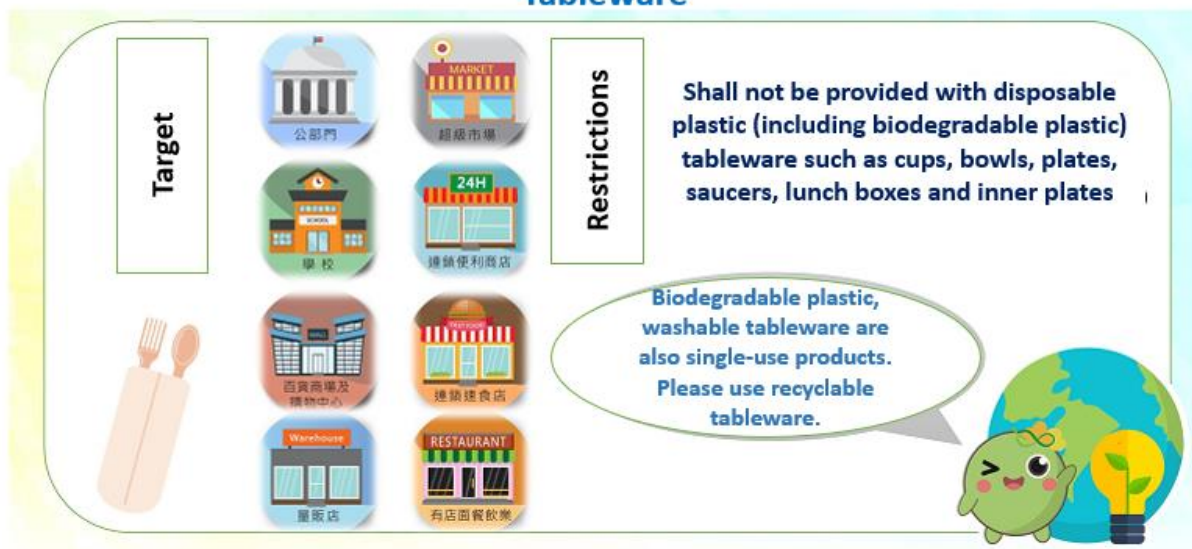
To avoid the impact of biodegradable plastics on the existing recycling system in Taiwan and to further reduce the usage of disposable tableware, the EPA announced the *Targets and Implementation Methods for Restriction of Disposable Tableware* on 29 June 2023. Starting from 1 August 2023, eight categories of entities are prohibited from providing disposable tableware made from biodegradable plastics.

Since July 2002, it has been mandated that eight categories of regulated entities, including public institutions (government departments, public schools, and public medical institutions), private

schools, department stores, shopping centers, wholesale stores, supermarkets, chain convenience stores, chain fast-food restaurants, and food and beverage businesses with physical storefronts, are not allowed to provide plastic disposable tableware. Starting from 1 August 2023, the scope of regulation for these eight categories of entities has been expanded to include a comprehensive ban on providing biodegradable plastic-made cups, bowls, plates, dishes, food containers, and inner trays in food containers for disposable tableware.

After referring to the policy frameworks proposed by the European Union on 30 November 2022 regarding bio-based, biodegradable, and compostable plastics, the EPA pointed out that biodegradable plastics are only recommended for specific purposes where reduction, reuse, and recycling are not feasible. In recent years, many businesses have used biodegradable plastics as an alternative material after plastic restrictions. However, these plastics require specific environmental conditions to decompose rapidly, and there are no suitable recycling or composting facilities in Taiwan. This situation affects the existing recycling system and gives rise to related environmental issues. To solve these issues and to further reduce the usage of disposable tableware, this announcement adjusted the regulations to include biodegradable plastic disposable tableware as prohibited items. The announcement is also expected to lead to more progress in promoting waste reduction at source in Taiwan.

## Targets and Implementation Methods for Restriction of Disposable Tableware



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Shiuan-Wu Chang; Ning-Hsin Chung; Miao-Ling Chen;  
Shao-Wen Chang; Ken Lee; Jason Hoy

For inquiries or subscriptions, please contact:

### Major Environmental Policies

Department of Comprehensive Planning  
Ministry of Environment  
83, Sec. 1, Jhonghua Rd., Taipei 100, R.O.C. (Taiwan)  
tel: 886-2-2311-7722 ext 2705  
fax: 886-2-2375-4262

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