



Major Environmental Policies

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

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Climate Change

Greenhouse Gas Reduction and Management Act Preannounced to Change Name to Climate Change Response Act

Climate change is a significant challenge faced by the whole world. Having promulgated the *Greenhouse Gas Reduction and Management Act* (溫室氣體減量及管理法) in 2015, Taiwan is one of the few countries that include long-term reduction goals in its official legislation. Seeing the grave conditions of global climate change, the EPA aims to speed up Taiwan's carbon emission reduction efforts and strengthen mitigation by drafting amendments to the *Greenhouse Gas Reduction and Management Act*. Revisions will also include a change of name to the *Climate Change Response Act* (氣候變遷因應法). Other points in the revisions are as follows:

2050 zero-emission goal included in legislation

The *Greenhouse Gas Reduction and Management Act* currently specifies that the national long-term reduction goal is to, by 2050, lower carbon emissions to 50% of the amount emitted in 2005. The revisions will change the target to zero greenhouse gas emissions by 2050, which is a declaration of Taiwan's determination. To achieve such a goal, government authorities of all levels should collaborate with every citizen,

enterprise, and organization to jointly facilitate emission reduction, develop negative emission technology, and promote global cooperation.

Strengthening climate management by appointing higher-level authorities in charge

Responsibilities of greenhouse gas reduction and climate change mitigation span different departments. Therefore, the Executive Yuan's National Council

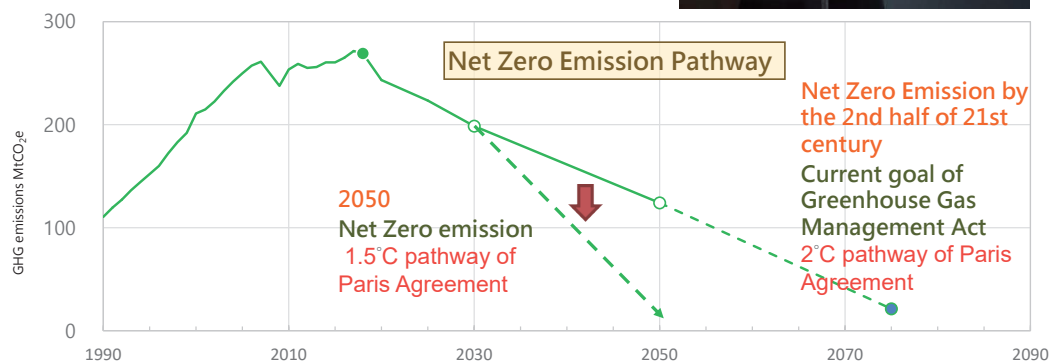
for Sustainable Development (NCSD) is designated under the revisions as the central authority in charge. The NCSD will be responsible for coordinating, delegating, or integrating policies related to national climate change response principles and cross-departmental work. In addition, competent central authorities are also to integrate the action plans of different departments and formulate national reduction programs, while local governments are to set up climate response committees

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Zero Net Emission Pathway

- The emissions of 2050 will fall below 50% of the base year (2005)
- First-stage GHG Reduction goal: the Executive Yuan approved that GHG will be reduced by 2% compared with 2005, and will achieve the reduction goals by 10% in 2025, 20% in 2030 respectively



and focus on coordinating and integrating response work.

Adding chapters specifically for climate change mitigation

The particular chapter on mitigation has three focuses: establishing essential capacities; connecting scientific research, projections, and predictions, and; determining frameworks. The first focus is to enhance Taiwan's overall essential capacities in responding to climate change. The government should build up mitigation capacities and enhance the participation of citizens, businesses, and organizations in the pursuit of mutual goals. The second focus is to strengthen links among scientific researchers, whereby central competent authorities for technology will compile and integrate climate change science, scenarios, and risk information and regularly publish relevant reports. Government departments of all levels are then to conduct risk assessments concerning climate change, to serve as references for

implementing mitigation actions. Lastly, the third focus is to finalize legal and policy frameworks for climate change mitigation. Central industry competent authorities are to formulate mitigation action plans for respective areas of responsibility, which central authorities will integrate and use to formulate national climate change mitigation and adaptation action plans. Climate change mitigation implementation programs will then be formulated by local governments based on circumstances in different regions. Information disclosure and public participation throughout all procedures will be achieved through editing and publishing annual reports on the outcomes of implementation.

Enhancing emission controls and incentive mechanisms to facilitate carbon reduction

Enhancing energy efficiency is a critical strategy toward zero-emissions. Control mechanisms for emissions in different sectors, such as manufacturing, transportation,

and construction, will be revised to elevate energy efficiency and lower emission intensity. Newly established pollution sources are mandated to adopt the best available technology and obtain offsets to reduce overall environmental impacts from increased emissions. Moreover, efforts will be enhanced to urge enterprises or government authorities of all levels to develop their own voluntary reduction proposals while incentives such as offering offset quotas are to be provided to those adopting reduction practices. The aim is to increase reduction efforts from both production and consumption.

Collecting carbon fees specifically for reduction-related uses

Carbon pricing helps facilitate emission reduction via economic incentives and is one of the effective reduction strategies recognized around the world. To improve Taiwan's carbon pricing system, one new addition in the

legislative revisions specifically deals with carbon fees, which will be collected from domestic emission sources and then be used solely for: carbon reduction; developing low-carbon and negative-emitting technology and industries; and subsidizing

rewarding investments in emission reduction technologies. This will help facilitate greenhouse gas reduction as well as the development of a low-energy economy. Currently, there is also a global trend towards developing carbon border adjustment

mechanisms to avoid carbon leakage, a new type of measure. By setting up methods to calculate and determine the carbon content of specific products, central authorities can help Taiwan's industries keep their global competitive edge.

Climate Change

Taiwan Methane Emissions Drop 50% from Baseline Year, Account for Under 2% of Total Emissions

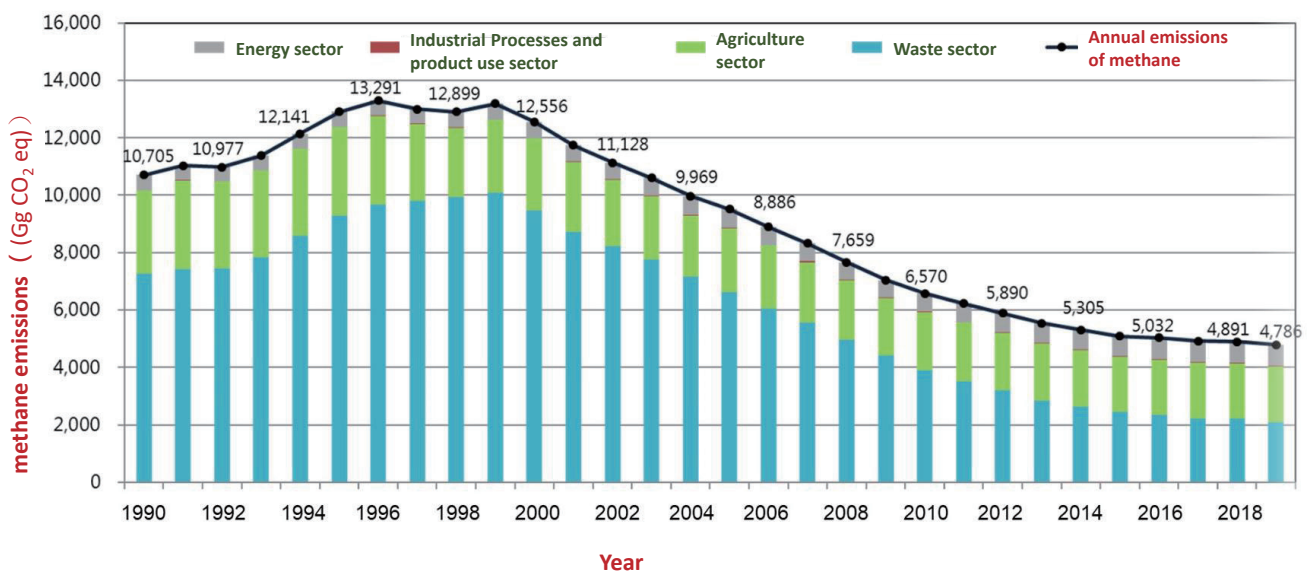
At the 26th Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC COP26) in Glasgow, Scotland, the US and the EU initiated the Global Methane Pledge, aiming, by 2030, to lower methane emissions to 70% of the amount emitted in 2020. The EPA explained that 90% of Taiwan's greenhouse gas emissions are carbon dioxide (CO₂) while 1.67% are methane, no oil or natural gas exploitation caused methane fugitive emissions. Due to efforts in waste reduction and biogas recycling and disposal, 2019 methane emissions were only half the amount in 2005.

Recent research shows that 60% of global man-made methane emissions come from agricultural activities and waste while 40% comes from the mining and use of fossil fuels. Africa, the Middle East, China, South Asia, and Oceania are places with the largest increases in methane emissions, yet the main causes of these emissions are not the same in different areas. For example, the major source of methane emissions

in Africa, South Asia, and Oceania is agriculture, while fossil fuels account for the most in China. With the continuous increase of global methane emissions, the Global Methane Pledge advocates reduction of fugitive methane and emissions from wastes, agriculture, mining, processing, storage, production, manufacture, and transportation of natural gas.

The EPA explained that, based on

data in the National Greenhouse Gas Inventory Report, Taiwan emitted 287.09 MtCO_{2e} in 2019 and that 90% of that was CO₂. There were 4.786 metric tons of methane emitted, which accounted for 1.67% of total emissions, which mainly came from agriculture and wastes. Garbage landfills along with wastewater discharge and disposal generated 2.102 million metric tons of methane (43.9%), while fermentation in livestock



digestive systems and of manure accounted for 1.942 million metric tons (40.6%). Problems of fugitive methane or methane emissions caused by extracting petroleum or natural gas do not exist in Taiwan.

Comparing emissions trends, in 2019, 4,786,000 metric tons of

methane were emitted, nearly 50% less than methane emitted in 2005 (9,508,000 million metric tons). Such a large decrease was mainly the result of Taiwan's long-term work to reduce the volume of garbage and landfills as well as increasing biogas capture at existing landfills. Meanwhile,

the EPA has been implementing policies that properly collect and treat household and industrial wastewater and also encourage the livestock industry to collect biogas for power generation. All these measures have contributed to significant achievements in lowering methane emissions.

**Environmental
Inspection**

Second Bioenergy Center to Begin Trial Operation in Taoyuan by End of 2021

The EPA plans to establish one food waste bioenergy plant in each of northern, central, and southern Taiwan to enhance food waste disposal channels and promote a circular economy. Following the official start of operations of Waipu Green Energy Ecopark in Taichung City in 2019, Guanyin Bioenergy Center in Taoyuan City will be completed by the end of 2021.

➡ *Guanyin Bioenergy Center in Taoyuan City will be completed by the end of 2021.*



According to the EPA, food waste is recycled domestically and is used to make pigswill (46%) or is composted or sent to bioenergy plants (54%). To enhance the capacities of all counties and cities to clear and process food waste by themselves, since 2017 the EPA has allocated more than NT\$1.3 billion to subsidize all counties and cities to: set up 51 sets of food waste shredding and drying equipment and 17 sets of high-speed fermentation equipment; increase the efficiency of 47 existing composting plants, and;

purchase collection and transport vehicles to enhance food waste disposal channels.

To promote food waste bioenergy plants, the EPA planned to set up one such plant in each of northern, central, and southern Taiwan and subsidize local governments to set up the plants through procurements. However, Taichung City and Taoyuan City proceeded with the plan through public-private partnerships to reduce financial burdens. As a result, Phase 1 of Waipu Green Energy Ecopark in

Taichung City (80 metric tons/day) started operating on 9 July 2019, its Phase 2 is expected to operate in 2014, with a processing capacity of 70 metric tons/day, for a total of 150 metric tons/day. Guanyin Bioenergy Center in Taoyuan City (135 metric tons/day) is expected to be completed and begin trial operation at the end of 2021, while Taipei City, New Taipei City, and Kaohsiung City are still assessing and planning for such setups.

In addition, based on the experience of promoting livestock manure reutilization, the EPA is pursuing further development of the co-digestion method. It has subsidized the environmental bureau of New Taipei City and Central Farm in Pingtung County to carry out food waste and livestock manure co-digestion tests. In January 2021, material feeding tests were conducted, and the results showed that the biogas production and the electricity generation efficiency were both increased. These demonstrated that the domestic promotion of food

waste bioenergy can yield concrete results in northern, central, and southern Taiwan.

The EPA noted that it would continue to intensify the promotion of bioenergy generated from

food waste. Through cross-ministerial cooperation, it will fully take advantage of the anaerobic digestion systems of pig farms and sewage treatment plants to help process food waste. The biogas produced can be used as

bioenergy, while the digestate turned into fertilizer for crop farms is also promoted by the EPA. In these ways, resources can be fully and effectively used, moving Taiwan towards a circular economy.

Air Quality

Management Regulations for Construction Projects Revised to Reduce Pollution Emissions

The number of development projects has continued to increase in recent years. There were nearly 108,000 construction projects in 2020, an increase of 10% compared to 2016. The particulate matter (PM₁₀) emission caused by construction projects was 20% more than 2016. Now that the EPA has announced the revised *Management Regulations for Air Pollution Control Facilities of Construction Projects*, pollution emissions from construction projects are expected to be reduced by 15%, cutting down approximately 3,415 metric tons of particulate matter per year, which equals the annual particulate matter emission of 15 Taichung Power Plants. The new regulations will become effective on 1 November 2022.

The highlight of the revision included three major categories: further enhancement of pollution reduction, improvement of pollution prevention and control, and strengthening of construction site management. The EPA will implement controls in six primary

areas:

1. Expanding the targets of Type 1 construction projects for control, lowering the control thresholds for constructions, roads, pipelines, bridges, and regional development projects to increase

pollution reduction.

2. Increasing the height of the construction fences in Class 3 control regions. For Type 2 construction projects located in an area that does not meet the air quality standards, the required height of the fence will be increased from 1.8 meters to 2.4 meters to reduce wind and dust.
3. Increasing the ratio of control areas for vehicle paths and exposed areas. For example, the control area of Type 1 projects has been increased from 80% to 90%, and the remaining 10% of the uncontrolled parts shall still be sprayed with water regularly every day to reduce the primary pollution emissions of construction projects.
4. Adding stipulations requiring large-scale projects to be equipped with automatic vehicle washing equipment. For regional development projects and dredging projects with a high frequency of vehicle movement,



➡ Adding stipulations requiring large-scale projects to be equipped with automatic vehicle washing equipment.

automatic vehicle washing equipment shall be installed for effective cleaning, and adjacent roads shall also be washed to reduce road pollution outside the work area.

5. Adding stipulations concerning measures and control facilities required for active operations. Water shall be sprinkled to keep a location wet during operations such as excavation, backfilling, transporting, loading, unloading, compacting, and screening. Dust shall be effectively contained during crushing (pulverizing), grinding, cutting, and scratching work, and dust escape shall be suppressed.

6. Adding stipulations requiring projects of a specific scale to be equipped with monitoring instruments and video

surveillance systems (CCTV). For construction projects with an area of more than one hectare and with a construction period of at least one year or with more than 10,000 cubic meters of earth transported in from outside, comprehensive monitoring shall be conducted to ensure that pollution prevention and control facilities are operated and maintained during the construction period to maximize the effectiveness of pollution reduction measures.

This revision of the *Management Regulations* has been the most significant one since the regulations were promulgated in 2003, affecting approximately 240 to 4,400 construction sites. The increased expenditure on the

prevention and control measures is estimated to account for only 0.01%~1.62% of the project expenditure. However, considering that construction projects will need additional funding for air pollution prevention and control facilities, relevant enterprises are given a one-year grace period, so that the revised regulations will not take effect until 1 November 2022. The EPA reminded that for construction projects that have been contracted or will be contracted, if the construction period extends past 1 November 2022, they should start to adjust air pollution prevention and control facilities and establish in advance the standard operating procedures for keeping operation records.

Waste Management

Foreign Ambassadors and Diplomats Invited to View Results of Recycling and Plastic-Free Policies in Penghu

With increasing attention on the issue of marine waste in recent years, at the 2019 UN Environment Assembly (UNEA) as many as 170 nations promised to take action to drastically reduce single-use plastic products before 2030. At the G20 Summit in the same year, they also agreed to implement the Blue Ocean Vision, which aims to completely eliminate marine plastic litter. Since then, reducing plastic garbage entering oceans has become a mutual challenge taken up by Taiwan and all other countries.

Penghu, Taiwan's largest offshore island, was chosen as the site to showcase the results of recycling and plastic reduction in Taiwan. Led by EPA Deputy Minister Shen Cih-hsiu, a delegation of over 50 members arrived on the island to witness the local government's efforts to promote recycling and the building of an island community surrounded by plastic-free waters. Delegates comprised ambassadors and envoys from seven countries, such as the Federation of Saint Christopher and Nevis; Taiwan-

based representatives and vice representatives from eight countries, including Vietnam and EU member states, and; officials from the EPA, the Ministry of Economic Affairs, and the Council of Agriculture. The delegation toured various recycling facilities, saw displays of garbage reduction at source, and exchanged ideas during a forum.

The delegation viewed low-carbon communities and recycling and reuse facilities in Nanliao; the

Water Refill program in Dushing Tenth Village; Chung-cheng environment-friendly business district in Magong, and; smart recycling machines for source reduction, recycling, and disposal of marine waste. Achievements were displayed from two major programs: "Recycling's New Values" and "Smart Practices of a Less Plastic Lifestyle". The first program focuses on plastic reduction at source, reusable cup rentals, smart water fountains connected to the Internet of Thing

(IoT), materials made from oyster shells, artistic and creative new products made from a waste white lead tree, Styrofoam recycling actions, creative designs with floating garbage, and plastic reduction in tourism. The latter program focuses on making plastic-reduction actions part of daily life, showing artistic pieces made of waste glass, furniture, and waste buoys.

There were five topics discussed during the forum, including source

reduction and recycling policies, plastic reduction achievements in a circular economy, new green technology, recycling in villages and communities, and smart recycling machines on offshore islands. Representatives from local communities, civic organizations, and the Penghu County government were invited to talk about their experiences and how circular economy policies, such as those for marine waste reuse, were actually carried out.

The Pescadores Islands, where Penghu County is situated, is Taiwan's largest offshore island group, with diverse marine organisms and ecological resources. Via the tour, the EPA hoped to instill in the public a sense of protection for marine environments so that the beautiful farming and fishing villages, nostalgic old-time culture, and the vast marine resources around Penghu are preserved and developed in a sustainable fashion.



➊ Led by EPA Deputy Minister Shen Chih-hsiu, a delegation of over 50 members arrived on the island to witness Penghu County government's efforts to promote recycling and the building of an island community surrounded by plastic-free waters.

Water
Quality

Coastal Messiness Reporting Event Launched to Safeguard the Coasts

The Executive Yuan Approved the “Tribute to the Ocean-Coastal Cleaning and Maintenance Plan” in May 2020 to establish a coastal cleaning mechanism, promote waste reduction at the source, and keep the coasts clean. However, due to human and tide activities, there are still accumulations of garbage on the coasts. To remediate the problem, the EPA launched the “Safeguard the Coasts – Take Pictures and Get Green Points” event. From 1 October to 15 December of 2021, people who take pictures of clean or dirty coasts at the seaside and upload them will have chance to win 5,000 to 50,000 green points. The reported dirty sites will also be cleaned up by the jurisdiction's coast management authority.

The EPA explained that to solve the marine waste problem, the Executive Yuan integrated the resources of nine central ministries and commissions, and cooperated with 19 coastal local governments to designate coastal management authorities for Taiwan's 1,988-kilometer coastline. It also established a "regular cleaning" mechanism in the Tribute to the Ocean Plan. Through the mechanism, 116,000 metric tons of coastal waste has been cleaned up since last year (2020). In addition, a coastal cleanup information platform was set up for people to inquire about coastal management

authorities and statistics on cleanup results as well as for reporting on coastal messy sites.

To use the messy site reporting function, after people log on to the system, they only need to upload photos of messy sites on the phone, and the system will read the coordinates of the messy sites on its own and complete the reporting. It will then send the reported case to the coastal management authorities in charge, which will then send personnel to the sites to clean up within seven days to ensure coastal land is kept clean.

The EPA said that the event lasts two and a half months starting from 1 October to 15 December 2021. If people found large accumulations of garbage on the coasts, they can participate in the coastal messiness reporting event by using the Coastal Cleanup Information Platform – Coastal Messiness Reporting Function (<https://ecolife2.epa.gov.tw/BeachCleanup/Dirty/Add>), filling out basic information of the case and uploading photos showing the current messiness. Those who complete the reports may receive up to 10,000 green points.

Environmental Education

International Environmental Education Workshop Held for Foreign Students in Taiwan

Thanks to recent slowdown of the pandemic in Taiwan, 26 students from 11 countries participated in the 2021 International Environmental Issues and Education Workshop organized by the EPA at Heping Island Park and National Museum of Marine Science and Technology in Keelung City on 11-12 September. The on-site training allowed them to understand Taiwan's current efforts towards solving marine waste issues and its environmental education achievements.



↑ Students from 11 countries participated in the workshop organized by the EPA at Heping Island Park.

The EPA once again organized international environmental education courses this year for foreign students studying in Taiwan. The “marine waste issues” was especially chosen to be the main focus of this year’s courses because of their transboundary nature, and the concept of circular economy was also introduced. The purpose was to let students understand Taiwan’s actions and experiences, strategies and feasible solutions to deal with marine wastes, which may serve as references for other countries when facing similar environmental issues.

The two-day event led students to Keelung’s Heping Island Park for on-site inspections. While they enjoyed the uniquely formed coastline of northern Taiwan, the students found a lot of marine debris strewn on the shore under the influence of the northeast monsoon. The sight inspired students to reflect on the fact that the ocean allows people to cross

barriers and national boundaries connecting people and cultures, but it also transports marine wastes and pollution to all parts of the world. At the coast, students carried out beach cleanup and classified and recorded the quantity and sources of marine debris according to the International Coastal Cleanup system. In the classroom, students learned about the various approaches that Taiwan has adopted -- from the government, enterprises to non-governmental organizations -- to reduce plastics at the source and promote circular economy, as well as how environmental protection could be applied in daily life.

To echo the United Nations Sustainable Development Goals, the EPA used Taiwan as the starting point, and organized the international environmental education event targeting foreign students studying in Taiwan. The purpose of this event, in its second year now, is to make students from other countries understand

the local and global environmental issues and threats that Taiwan and the world are facing, and inspire them into action to solve environmental problems. It is one of the important training programs offered by Taiwan, the host of the Global Environmental Education Partnership Asia-Pacific Regional Center.

Under the guidance of the course instructors and after brainstorming in groups, the 26 young people from different countries learned about the current state of the environment in different countries, diverse ways of thinking and perspectives, and shared possible solutions to environmental issues. Marine wastes know no national boundaries. It is hoped that the students can apply their experience in Taiwan when facing their own country’s local environmental issues in the future, so that the seeds of environmental sustainability can be spread all over the world.

Chemicals

Ammonium Nitrate and Hydrogen Fluoride Added to List of Concerned Chemical Substances

The EPA newly announced ammonium nitrate and hydrogen fluoride as harmful chemical substances of concern, tightening operations such as manufacturing, imports, sales, uses, transportation, and storage, effective immediately. Handlers are to obtain permits, report operating data, and comply with regulations relevant to accident prevention and emergency responses. Sales and trades on online shopping platforms are banned, and hydrogen fluoride-containing products sold on the market must have proper labels. Above all, the measures aim to prevent accidents and harm caused by improper use.

These two substances are now announced as harmful concerned chemical substances because of their hazardous characteristics, and the EPA now has heavy penalties in place for mishandling them. Handling either substance without

following the relevant regulations will result in fines between NT\$30,000 and NT\$300,000. Offenders may be sentenced up to seven years or even receive life sentences, along with fines of up to NT\$1 million, depending on

the extent to which their violations harm human health or cause death. A fine between NT\$30,000 and NT\$500,000 will be imposed for failing to comply with prevention and response regulations. Violators will be penalized with

finest between NT\$1 million to NT\$5 million for not having third-party liability insurance or for failing to set up response equipment or detection and alarm facilities in accordance with regulations. The EPA pointed out that ammonium nitrate is a substance of high concern internationally. It is not only a precursor substance to the first substance listed by the EPA as a chemical of concern (nitrous oxide or laughing gas), but, for example, its improper storage was also behind the large 2020 explosion in Beirut, Lebanon. As for hydrogen fluoride, its unsafe handling has also caused numerous casualties and deaths. For these reasons these two substances are listed for control.

The EPA said that products on the market such as cleansers for aluminum alloy, outer walls, and limescale usually contain hydrogen fluoride at a concentration of less than 10%, and may be susceptible to misuse by the public, or cause incidents due to delayed hospitalization. Hence, controls for hydrogen fluoride are to be strengthened in phases. For products with a low concentration (above 0.1% and below 10%), containers and packaging are to comply with relevant regulations

and fully display product information to inform users of possible risks and ensure safe use. Meanwhile, a minimum label size has been specified for containers and packaging. For the use of higher hydrogen fluoride concentrations (over 10%), which are extremely dangerous to human health, permits must be applied for and approved. To lower risks, factories, chemical substance retail stores, and other outlets and channels selling hydrogen fluoride solvents must obtain permits before selling them.

To reduce safety and health risks arising from misuse and abuse of ammonium nitrate and hydrogen fluoride, the EPA has proposed a strategy with five requirements and two bans. Handlers are required to acquire permits, operate only after being licensed, apply proper labels, record all activities online, file monthly reports, carry out prevention and response measures, and comply with bans on online buying and selling. All operations from the start to the end of the industrial chain, including manufacturing, imports, sales, use, and storage, cannot proceed without permits. If the total amount handled exceeds the control levels, operators are to

abide by accident prevention and emergency response regulations under the *Toxic and Concerned Chemical Substances Control Act* (毒性及關注化學物質管理法). These measures include submitting risk prevention and response plans, acquiring liability insurance, conducting professional training for response personnel, setting up joint prevention entities, preparing response equipment and detection and alarm facilities, and registering transport documents. These measures are aimed at improving the risk management of chemical substances by enhancing accident response, risk prevention, transportation, and safe management of the two substances.

Finally, the EPA further explained that, after ammonium nitrate was listed as a concerned chemical substance, as of 1 October 2021, enterprises are to keep online records of every operation activity and file them every month if the amounts they handle change. The purpose is to obtain storage information in real-time, strengthen response management, and further enhance management of the production sources of laughing gas.

Waste Management

Shipping Manifest Reporting Made Easier with User-friendly Tools

Regulated enterprises are required to report online the amount and flow of waste they produce to environmental bureaus. To increase the efficiency of industrial waste manifest reporting operations, since 2019 the EPA has worked with enterprises to provide four user-friendly reporting tools that now benefit more than 40,000 regulated enterprises.

After listening to the needs of enterprises, the EPA conducted reviews of the problems

associated with previous reporting mechanisms, such as difficulties in managing and keeping paper

manifests, time-consuming and error-prone manual reporting, and duplication with management

systems of large enterprises. It then provided four user-friendly reporting tools, including:

- (1) An electronic manifest APP.
The real-time transmission makes management easier for enterprises.
- (2) A batch manifest submission service that resolves the trouble of enterprises needing to report manifests one by one.
- (3) Interface programs were developed to integrate the industrial waste reporting system with the industries' own systems. The enterprises can use the interface program to report if they have established their own waste management systems.
- (4) Reporting modules formed by using historical templates or templates created by enterprises that were well rated when they were launched.

According to the EPA, these four optimizing measures are suitable for different types of enterprises. The electronic manifest APP can transmit information back in real-

time, batch manifest submission saves enterprises from typing information repeatedly, interface programs are mainly used to integrate the reporting system with large-scale enterprises' own waste management systems, while manifest modules are more helpful for small-scale enterprises with fewer waste items or more fixed waste types. Regulated enterprises can choose a reporting mode that suits their needs.

Taking a large-scale tech company as an example, integrating its own management system with the EPA's innovative function has saved 90% of the time required to fill out manifests in reporting data and clearance dispatch information, and simultaneously reduced errors caused by manual filling. Using the manifest APP after clearances has also saved 90% of the time spent for manifest filing. This big company expressed that the streamlined reporting procedure has made waste flow management more time-efficient, accurate and environmentally-friendly, and helped it become a responsible purchaser in the supply chain. In addition, regulated enterprises adopting user-friendly

reporting tools are expected to save six million paper manifests every year in the future.

The EPA's promotion of user-friendly reporting services has effectively raised reporting efficiency. Since September 2019, enterprises that use the shipping manifest APP have reported more than 20,000 manifests through electronic manifests. According to the feedback of the 40 enterprises that used batch reporting, reporting efficiency was increased approximately 80%, and the reporting error rate dropped to 0.1%. In addition, 65 enterprises have adopted the automated interface method for reporting. A total of near 150,000 manifests have been reported through combined batch reporting and interface reporting methods. Enterprises are encouraged to participate and use the dedicated information line, 0800-059777, if they are interested to know more about user-friendly reporting tools. Specialists will be at their service (Industrial Waste Report and Management System https://waste.epa.gov.tw/prog/NewsZone/news_browse.asp?nid=).

Climate Change

Regulations to Be Revised to Incorporate Carbon Tariff Response Measures

To accelerate carbon reduction, the EPA is revising the *Greenhouse Gas Reduction and Management Act* and had frequent discussions with relevant ministries, non-governmental organizations and industries. After summarizing the suggestions from all sectors, the revision bill was renamed *Climate Change Response Act* to expand policy coverage. In addition, in view of the fact that international carbon reduction regulations are being set up with economic and trade issues in consideration, in particular, the European Union (EU) is about to implement the Carbon Border Adjustment Mechanism (CBAM), the EPA is monitoring these trends closely and will come up with response measures when the need arises. For example, the collection of carbon fees and the product carbon content calculation and regulation methods have been included as key points of this revision.

On 22 April, Earth Day, President Tsai declared that “transitioning to net zero by 2050 is a target of the whole world. It is also a target of Taiwan.” Premier Su of the Executive Yuan also reminded everyone at an Executive Yuan meeting on the same day that “greater determination and resolve are needed to speed up and aim for 2050 net zero carbon emissions.”

To achieve the target of transitioning to net zero, the Executive Yuan has held many “net zero emissions pathway assessment working group” meetings, inviting Academia Sinica and the Industrial Technology Research Institute to provide professional advice. Cross-ministerial technical evaluations based on the four major work circles of “decarbonized energy”, “industry and energy efficiency”, “green transportation and electrification of transportation vehicles” and “carbon negative technologies” were conducted. Pathways were also developed on the basis of short-, medium- and long-term energy and industrial policy planning for 2030, 2040 and 2050, respectively.

In addition, the EPA has been collaborating with relevant ministries to communicate with members of the public on Vision 2050, discussing key issues such as agricultural and forestry carbon sinks, net zero construction, green transportation, low-carbon industries, and economic tools. Cross-field social dialogues are also promoted to encourage participation from all sectors and investment in the research and development of innovative technologies.

According to the EPA, the EU is still reviewing the CBAM bill after it was proposed on 14 July of this year. Some implementation details and calculation methods are still to be formulated. In addition to the EU, the United States, Japan and Canada have also successively announced plans to implement a similar kind of carbon border adjusting mechanism. When the EPA held the meeting with representatives from the Ministry of Economic Affairs, Chinese National Federation of Industries, Taiwan Steel and Iron Industries Association, Taiwan Cement Manufacturers’ Association, and Petrochemical Industry Association of Taiwan on 2 July of this year,

the industrial representatives also recommended revising regulations. In addition to strengthening carbon reduction management in domestic industries, they thought fair competition for products between countries should also be considered and the government should evaluate applying corresponding carbon emission control measures on imported products.

The EPA stated that it is crucial to revise the *Greenhouse Gas Reduction and Management Act* at this moment. Not only is it to be in line with the international community, it is also to guide policies towards accelerating and intensifying carbon reduction efforts, and to help industries invest in low carbon technologies and economic development so as to lead the country towards sustainable development. In light of the urgency for the whole world to reduce carbon and the export-oriented nature of Taiwan’s economy, the EPA will continue to study and discuss with various agencies and help domestic industries respond appropriately to maintain international competitiveness.

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