Major Environmental Policies

February 2023

1. Feature Article: Industrial Waste Control Aligns with Global Trend

Industrial waste is an important target of the overall waste control under the policies aiming for a circular economy as well as recycling and zero waste. On 1 March, during its report at the Legislative Yuan, the EPA emphasized that future revisions will focus on an overall change that is centered on resource recycling, while keeping abreast of the latest international recycling trends. Through amending the *Waste Disposal Act* (廢棄物清理法), the EPA will redefine what constitutes "wastes" in order to maximize resource utilization and minimize waste generation.

The principles of the current industrial waste control policies are as follows:

1. Enhance management of industrial waste reuse

Based on Article 31 of the *Waste Disposal Act*, the EPA will incorporate the reuse checklist as part of the industrial waste disposal plan for evaluation, along with qualifications for receiving wastes, manufacturing production and facilities, and product quality. Reuse is not permitted until after the EPA's evaluation and approval. A set of evaluation guidelines has also been formulated for waste reuse and serves as a reference that clearly quantifies evaluation items mentioned above.

2. Carrying out quality and flow controls of reuse products

To strengthen quality control on reuse products and better track their flows, on 15 December 2022, the EPA announced the revised *Management Regulations for Reuse of Industrial Wastes* (事業廢棄物再利用管理辦法). In the revised version, public and private waste clearance and disposal enterprises are mandated to use approved vehicles for operation when commissioned to clean up reused industrial wastes, and comply with newly added regulations on usage locations, quality standards, inspection frequencies concerning reuse products. Revisions also specify sales targets, vehicles and machinery for clearance and transport, reports, and manifest submissions, and mandated improvements within a period of time or the enforcement of a temporary halt to accept wastes when certain reuse products do not meet the qualifications. There are other new regulations concerning reuse operations, sales, transportation of reuse products to usage locations, etc. All of the above aim to better track and manage where reuse products finally end up, which is also consistent with how public and private waste clearance and disposal enterprises manage their operations.

3. Flow reports and controls

Taiwan's system for controlling industrial wastes uses technological tools to keep track of where wastes are generated and headed while being disposed of. Not only are clearance and transporting vehicles and machinery outfitted with GPS for tracking and monitoring during their operation, but their operations are verified with data reported by industry enterprises

as well as industrial waste clearance, treatment, and disposal organizations. Each local environmental bureau is in charge of inspections, reports any violations, and assists in the EPA's secondary audits in order to better manage industrial wastes and track their flows.

Announcements have been made according to the *Waste Disposal Act* that enterprises reaching a certain scale are to submit their industrial waste disposal plans and report waste generation, clearance and transportation, disposal and other related operations online. So far over 43,000 waste-generating enterprises have been listed for control, and as of early December 2022, a total of 17,285 clearance and transporting vehicles had been outfitted with GPS. Moreover, enterprises listed for control are provided with the following four tools in order to encourage paper-free registration and manifest submission:

(1) An electronic manifest app. The real-time transmission makes management easier for enterprises.

(2) A batch manifest submission service that resolves the trouble for enterprises needing to report manifests individually.

(3) Interface programs were developed to integrate the industrial waste reporting system with the industries' own systems. 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.

Since September 2019, enterprises that use the app have reported more than 110,000 manifests through electronic manifests, and 70 enterprises have opted for the batch reporting service. Previously, enterprises not part of those listed for control (small-scale clinics, for instance) were required to fill out a paper delivery manifest in sextuplicates. After the EPA announced the revised *Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste* (事業廢棄物貯存清除處理方法及設施標準) on 16 February 2022 and completed developing a relevant system at the same time, enterprises can now design their own apps to integrate the industrial waste reporting system with their own. The goal is to achieve paper-free reports of hazardous wastes, and to date 120,000 reports have been submitted, resulting in saving 720,000 paper manifests in total. Currently, there are four enterprises working on developing their integrating systems.

4. Facilitating waste reduction and recycling networks for waste-generating industries

(1) Promoting recycling and waste reduction in waste-generating industries with industrial waste disposal plans

On 9 May 2022, the EPA announced the *Reference Guidelines for Evaluating Industrial Waste Disposal Plans* (事業廢棄物清理計畫書審查作業參考指引). To respond to the demand for industries to add recycling and reuse for better waste reduction, the *Guidelines* have added three more recycling models on top of the original seven models, with which enterprises listed for control are able to utilize after evaluating authorities approve their disposal plans. This has led to facilitation of reuse of wastes or the recyclables within the factories or even across different ones, which in turn creates bigger recycling benefits. There is already one case of successful operation of a newly added recycling model after its industrial waste disposal plan was approved.

(2) Facilitating voluntary management within the recycling network

In 2022, the *Guidelines for Evaluating Waste Disposal Plans Using Recycling Networks* (資源循環網絡廢棄物清理計畫審查作業要點) were announced to achieve resource recycling and zero waste. Under the linear model of waste generation, clearance, and disposal (reuse), waste utilization and circulation within a recycling network has now been added and is able to connect the manufacturing process of two or more enterprises. With factors from raw materials to the overall lifespan of wastes taken into account, this model integrates the upper, middle, and lower parts of an industry, including supply of raw materials, product use, waste disposal (reuse), and seeks solutions to enhance production processes or better recycling or reuse of wastes. In this model, the waste-generating industries will adopt voluntary management and utilize the diverse waste registration mechanism in place. Applicants must be publicly listed companies and will be solely responsible for operating and managing the overall waste clearance network. Meanwhile, other enterprises within this network are to commit to collaborating with the applicants in supervision, management and assisting to establish a “virtual resource recycling network” together. This is a brand-new option for industries in their transition toward zero waste.

Future amendment prospects

The old mindset of waste management mostly focused on end-of-pipe controls. After a thorough review on unclear accountability on management as well as systematic changes, the EPA has now aligned with the global recycling trend by centering on resource recycling and circulation in order to enhance waste recycling and reuse. In addition, further amendments have been launched on the *Waste Disposal Act* so as to redefine what constitutes wastes, ultimately maximizing resource utilization and minimizing waste generation.

2. Award Ceremony Held for the Third Environmental Map Competition

The EPA and the Ministry of Education co-organized the third “Environmental Map Creation" competition. On 17 February, awards were presented in the Sunshine Hall of Taipei’s Daan Park MRT Station to commend a total of 70 works submitted by middle-grade and upper-grade elementary students. The top prizes for middle-grade and upper-grade groups were awarded to the Affiliated Experimental Elementary School of National Chiayi University for "Exploring with the Purple Butterfly -- A Fantastic Journey of Taiwan Purple Crow Butterflies" and Lihu Elementary School in Taipei City for "Getting Close to Neihu’s Waters, Enjoying Living Green."

To encourage parents, children, teachers, and students to break away from 3C (computers, cellphones, and video games), go outdoors, observe and express something about the surrounding environment, appreciate its beauty, and become environmental explorers who protect the environment, since 2020 the EPA and the Ministry of Education have held the yearly Environmental Map Creation competition. The third edition of the competition has just ended. Unlike previous years, the winning teams of this year's competition not only showcased daily environmental protection actions but also used delicate and creative artistic works to portray changes in the environment.

The top prize-winning work of the middle-grade group, "Exploring with the Purple Butterfly -- A Fantastic Journey of Taiwan Purple Crow Butterflies," used the concept of a foldable book to create an interesting interactive experience for viewers by allowing them to move the purple butterfly icon and understand the seasonal migration pattern. The work is excellent in terms of ecological information and aesthetic presentation. The top prize-winning work for the upper-grade group, "Getting Close to Neihu's Waters, Enjoying Living Green," expressed a sense of connection to the past, current and future of the environment around one's own home, and combines delicate map drawing with the concept of water resource protection, exploring the environmental stories of the region. Among many works, it stood out and demonstrated outstanding insight and an environmental protection perspective.

"Each work represents the voice of a child," said Ya-Fen Wang, Deputy Minister of the EPA. These works showcase the beauty of different regions in Taiwan while also documenting environmental changes. We would like to thank all the teachers who have led their students to participate in the competition. After carefully observing the people and things around them, the students linked these elements together to create environmental maps. Through the creative process, they have gained a better understanding of the environment and become more aware of the need to protect it.

The award-winning works of the environmental map competitions over the years can be found on the official website https://www.environmentalmap.com.tw.

A competition participant describes her work to Deputy Minister Ya-Fen Wang.

3. Draft Revisions of Air Pollution Control Regulations for Semiconductor Industry Preannounced

On 18 February 2023, the EPA preannounced the draft revisions of the *Air Pollution Control and Emissions Standards for the Semiconductor Industry* (半導體製造業空氣污染管制及排放標準). With a view to be more practical and streamlined and encourage voluntary management, the revisions have added emission concentration standards as well as regulations for evaluating monitoring and inspections. Concentration standards for individual emission channels are set to replace previous controls targeting the total emissions of plants. Other focuses include strengthening voluntary monitoring for emission channels and simplifying regulations concerning regular inspections. The ultimate goal is to ensure both air pollution prevention and control as well as the semiconductor industry's development with simplified administrative procedures for the public's convenience.

Following the booming development of semiconductor manufacturers and other high-tech industries, it is of higher importance to address the various resulting environment issues. The focus of the amendment was to regulate the concentrations from individual emission channels instead of the original controls for total emission regardless of the scale of a plant. The goal is to give more flexibility to environment efforts and management of production capacity while urging newly built plants or launched production processes to select facilities that emit less pollution or are more effective in pollution prevention and control. Emission standards were also added to enhance competent authorities' inspections and make it more convenient for enterprisers in their voluntary management.

In addition, the list of the *Stationary Pollution Sources in Public and Private Premises Required for Regular Testing and Registration* (公私場所應定期檢測及申報之固定汙染源) was announced on 6 June 2022. In line with the list's regulations regarding inspections, the revised Standards mandate those with high emission concentrations and prone to cause pollution to install emission monitoring equipment in order to strengthen voluntary management.

The EPA emphasized that, since its promulgation on 6 January 1999, the Standards has laid a solid foundation to effectively manage air pollution prevention and controls for the semiconductor industry. This has been achieved via direct controls, from the technological aspect, on air pollution emissions from the manufacturing processes. Despite revisions of multiple regulations over the years, the Standards had not gone through an overall review. Upon closer examination of its execution and problems, it became evident that a thorough amendment was necessary so as to improve the current air pollution control and prevention results and also the management mechanism. Meanwhile, regulations regarding inspection periods under the *Stationary Pollution Sources in Public and Private Premises Required for Regular Testing and Registration* were adjusted in consideration of the industry's features. The EPA hopes to, via the revisions this time, provide convenience to the public with simplified procedures and also improved air pollution prevention and control in the semiconductor industry, creating a win-win situation for environmental protection and the industry's development.

4. Completion of Improvement Project will Significantly Raise Water Quality

To protect the water quality in Shihmen Reservoir and the environment of its water supply protection zone, the *Shihmen Reservoir Upper Catchment Area–Baling Area Water Improvement*

***Project*, which was subsidized by the EPA, has been completed and started operating on 10 Nov 2022. The project used integrated biofilters for effective phosphorus and nitrogen removal, thereby reducing the discharge of household into the catchment area located the reservoir.**

Shangbaling is located in Fuxing District of Taoyuan City with many popular tourist attractions. The household generated by the crowds of tourists affects the quality of the local living environment and the water quality of the upper catchment area of Shihmen Reservoir. Considering that Shangbaling is an area with average altitude of 1,000 meters, scattered small settlements, high and low terrains and cutting streams, a “settlement-style” sewage system has been installed. The project adopted a biofilter technology called BioNET (biological New Environmental Technology), which was developed by the Industrial Technology Research Institute, in lieu of traditional septic tanks and constructed new sewers, pumping wells and purification tanks. The project was completed on 3 Nov 2022 with 56 households connected to the system and a wastewater treatment facility capable of treating 50 metric tons of domestic wastewater a day. The system is expected to be capable of reducing 6 kg/day of biological oxygen demand (BOD), 6 kg/day of suspended solid (SS), 0.75 kg/day of total nitrogen (TN) and 0.43 kg/day of total phosphorus (TP).

Due to the steep terrain and the narrow and winding roads in the Baling area, construction was not easy. However, with the efforts of the Taoyuan City Government, the problem of household wastewater in the rural area has been resolved, leading to the improvement of the reservoir’s quality and the creation of a high-quality water environment.

Current location

5. Enterprises Set Examples of Green Office Transformation

In response to "net-zero green living," a key strategy for achieving net-zero transition, the EPA is promoting green offices. A total of 6,821 enterprises have participated in the initiative, reducing approximately 300,000 metric tons of carbon emission in 2022 alone, equivalent to the annual carbon absorption of 775 Daan Forest Parks. Recently, 33 more exemplary enterprises have also

declared their commitment to promoting green offices, leading the trend of green office transformation.

At the EPA's invitation, on 2 February, enterprises that have responded to the call for the green office initiative, enterprises and groups that have won the National Enterprise Environmental Protection Awards, and enterprises that met the RE100 standard got together. A total of 33 enterprises, including Nanhua University and CTCI Corporation, as well as city and county environmental protection bureaus, attended the event to declare their commitment to implementing green offices and expressing their determination to strive for net-zero transition by 2050.

EPA Deputy Minister Chih-Hsiu Shen stated that the green office initiative is an important milestone in promoting net-zero green living. Initially, 35 green office measures under five indicators, namely, "saving energy and resources," "source reduction," "green procurement," "environmental beautification," and "advocacy and promotion" were to be implemented by participants that voluntarily responded to the call. Subsequently, a green office reference manual will be developed, compiling demonstration cases as reference for all sectors. In the future, green label standards for office spaces will be established, and related verification standards for a green office will be completed, which will be aligned with international standards, to guide domestic offices to change their past office behaviors and create a green and friendly office environment.

With actions such as using air-conditioning units with eco-labels, replacing more than half of light fixtures with LED lights, using water-saving devices and equipment in the office area, and conducting video conferences, the participating enterprises saved 330 million kilowatt-hours of electricity (equivalent to the annual power consumption of 78,000 households), 153,000 metric tons of water (equivalent to the daily water consumption of 540,000 people), and 34,000 metric tons of gasoline, reducing approximately 300,000 metric tons of carbon dioxide emissions in 2022.

"It's actually quite easy to go green in the office," said Deputy Minister Shen as he encouraged enterprises to adopt environmentally friendly practices, such as purchasing energy-saving and water-saving equipment that carry eco-labels, leasing instead of buying, cutting down on the provision of single-use tableware and cups, and showing colleagues how to develop environmentally friendly habits. He also shared the experience of the EPA's cooperation with private citizen power plants. The EPA building is able to generate 148,000 kWh of electricity annually, which is 14% of its total electricity consumption in a year after solar panels were installed on its rooftop. As long as an office has a roof area of over 40 ping and receives at least two hours of sunlight a day, it can participate, and the EPA has set up a platform to assist with matchmaking.

EPA Deputy Minister Chih-Hsiu Shen with enterprises and groups attended the event to declare their commitment to implementing green offices

6. Environmental Quality in Industrial Zones Improved via Water, Land and Air Monitoring

Of all the public complaints, odors caused by air pollution are one of the major nuisances. A special project has been carried out by the EPA since 2021 to target public complaints about odors from Dayuan Industrial Park. It has resulted in major improvement of the local air quality and a significant drop in complaints filed by residents through two years of monitoring, screening, evidence collection, and verification.

The EPA has always taken seriously the responses of residents around the industrial zones toward air pollution odors. Since 2021, a project has been carried out specifically to respond to complaints about odors in Dayuan Industrial Park. Measures adopted include screening pollution hotspots with Internet of Things (IoT) connected to a network of air quality sensors and far-end water monitoring, collecting evidence concerning pollution sources with technologies, and having inspectors conduct onsite visits.

Dayuan Industrial Park, along with its second-phase zone, has been in operation for over 40 years and sits right next to neighboring residential areas with no buffer zones in between. On December 2020, the local borough chief mentioned multiple times the burning and acidic-smelling odors and those of chemical solvents wafting out of the industrial park, so in January 2021 a special project was launched by the EPA to tackle this problem along with a chat group that was set up to allow residents to stay in contact with the chief in order to get a full grasp of the pollution.

Based on previous investigations, the EPA staff suspected that potential odor sources included air pollutants, and that contamination of water quality could probably have caused the acidic smells. The IoT, consisting of air quality sensors installed around the industrial zone was used to investigate

air pollution, and possible pollution sources were detected near the borough chief's residence, which is located between the industrial park's first- and second-phase zones. Later the investigators pinpointed the potential pollution sources by using big data to analyze meteorological conditions, wind directions, wind speeds as well as studying changes in the air quality data obtained by sensors over 24 hours and during the week. In the meantime, air pollution was monitored with drones outfitted with equipment such as infrared thermal-imaging cameras, infrared gas sensors, 3D light detection and ranging (LiDAR), and vintage-point security cameras. At the same time, investigation on water pollution began with installing far-end water monitors in areas where enterprises discharge their wastewater, allowing inspectors to conduct integrating onsite inspections on both air pollution and wastewater at the time the borough chief reported that odors were found.

A total of 13 violations on air and water pollution were reported during the two years that the special project was conducted. The offenses included improper operation and maintenance of pollution prevention and control facilities as enterprises lacked necessary relevant expertise, inconsistency between permits and circumstances for facility operations, inconsistency between registered records and actual circumstances. More serious ones included discharging wastewater that had concentrations far exceeding the relevant standards. An enterprise was even found by the EPA during a joint investigation with Taoyuan City Environmental Bureau to have illegally dumped heavy metal-containing waste solvents at nighttime, which is now under further investigation by the Prosecutors' Office.

Besides full utilization of technological tools, the EPA particularly thanked the local borough chief for providing necessary information as well as the locations to set up monitors. Collaboration with environmental bureaus and local residents will continue as will the monitoring of pollution. Enterprises are urged to do better in abiding by the proper operation, management, and regular maintenance for pollution prevention and control equipment and also be more responsible themselves in protecting the environment.

7. Making Night Markets Greener

The temporary halt to garbage collection during long holidays often result in litter and unsanitary environment in night markets. To avoid such occurrence, the EPA has called on local environmental authorities to target market nights, particularly where and when crowds gather, and coordinate managing units to collect garbage and maintain environmental quality. Other than integration of resources to help make night markets better, the *Green Night Market Promotion Guidebook* was published on 26 December 2022, with all local environmental bureaus to continue their efforts to improve night markets.

The EPA further noted that during the past three years, local environmental bureaus had been subsidized to assist enterprises to phase out disposable utensils by switching to reusable utensils for indoor dining, offering discounts to those bringing their own containers, and providing rental service for reusable containers. Other measures include installing garbage bins for waste separation, enhancing recycling, helping stalls that sell fried foods install oil and smoke control facilities as well as waste oil and wastewater interceptors, as well as keeping public restrooms clean. The environmental bureaus then nominated night markets with outstanding performance in adopting the five major measures mentioned above. Via a public voting as well as rating done by anonymous shoppers, last year Kenting Night Market in Pingtung, Fu-Hwa Night Market in Tainan, Dong-Da-Min Night Market in Hualien, and Luotung Night Market in Yilan were chosen as the most environmentally friendly. Having spent three years carrying out the task of night market

improvement, the EPA then on 26 December 2022 published the *Green Night Market Promotion Guidebook*, which compiles all the methods and measures carried out to achieve such results. The guidebook is provided to competent authorities, environmental bureaus, and night markets' administrative organizations as a reference.

8. Regulations to Be Amended to Restrict Biodegradable Plastic Tableware

To avoid the impact of biodegradable plastics on the existing recycling system and to further reduce the usage of disposable tableware, the EPA preannounced the draft revision of the second item of the *Targets and Implementation Methods of the Disposable Utensil Ban* (免洗餐具限制使用對象及實施方式), which will limit the use of biodegradable plastic disposable tableware. The regulation is expected to take effect on 1 August 2023.

Since July 2002, the EPA has stipulated that eight types of entities -- including government agencies, public and private schools, department stores, shopping centers, wholesale stores, supermarkets, chain convenience stores, chain fast food restaurants, and storefront catering industries -- are not allowed to provide plastic disposable tableware. The regulation has been amended twice in 2016 and 2019 to expand the restriction to cover the use of all types of disposable tableware in government agencies, school cafeterias, department stores, shopping centers, and chain fast food restaurants.

On 30 Nov 2022, the European Union proposed a policy framework for bio-based, biodegradable, and compostable plastics, and suggested that biodegradable plastics be used for specific purposes where reduction, reuse, and recycling are not feasible. The EPA realized that many enterprises in Taiwan have been using biodegradable plastics as an alternative material after plastic restrictions were put in place, and such materials can only be rapidly broken down under specific environmental conditions. Considering that there is no appropriate recycling method or

composting facility for such materials in Taiwan, which affects the existing recycling system and leads to related environmental issues, and to further reduce the use of disposable tableware, the EPA preannounced that the definition of non-plastic disposable tableware will be adjusted, and biodegradable plastic disposable tableware will be included in the scope of the items that shall not be provided by the enterprises in the regulation.

9. Announcement of Guidelines for Certification of Soil and Groundwater Remediation Technology

To promote and develop soil and groundwater pollution remediation technologies in Taiwan, enhance technical capabilities and quality and facilitate the cultivation and spreading of Taiwan's outstanding remediation technologies at home and abroad, the EPA has formulated the Guidelines for the Application, Review and Management of Certificates of Effectiveness for Soil and Groundwater Pollution Remediation Technologies. The guidelines will enable applicants to certify the effectiveness of soil and groundwater pollution remediation technologies. They aim to encourage the adoption, at home and abroad, of researched and verifiable environment-friendly technologies that can effectively reduce the concentration or toxicity of pollutants.

The purpose of the guidelines is to enhance the technical capabilities of soil and groundwater pollution remediation in Taiwan. Referencing ISO 14021, the guidelines adopted the model of self-declaring the effectiveness of technologies for soil and groundwater pollution remediation. The guidelines delineate how evaluation will be done on the functions, characteristics and scope of application of existing soil and groundwater technologies, including methods, equipment, agents and materials. Applicants can self-declare the effectiveness and performance of their technologies during the remediation process. Once the declarations are reviewed and approved by a review team established by the EPA, certificates of effectiveness will be issued. Obtaining official certification will benefit the business of applicants greatly. As the certifications demonstrate the effectiveness of applicants' remediation technologies and enhance their market advantage, the use of these technologies will also accelerate land restoration.

The contents of the guidelines are as follows:

1. Purpose (Guideline 1)
2. Definitions (Guideline 2)
3. Qualification of applicants and application documents (Guideline 3, 4)
4. Review process (Guideline 5)
5. Confidentiality agreement (Guideline 6)
6. Items written on certificates of effectiveness (Guideline 7)
7. Expiration dates and extension of certificates of effectiveness (Guideline 8)
8. Reissuance and renewal of certificates of effectiveness (Guideline 9)
9. Review for the modifications of technical specifications on certificates of effectiveness (Guideline 10, 11)
10. Requirements when applicants pause or suspend businesses (Guideline 12)
11. Tracking and inspection processes (Guideline 13)
12. Disclosure of information on violation cases (Guideline 14)
13. Revocation and annulment of certificates of effectiveness (Guideline 15, 16)

10. Stricter Restrictions on Organotin Use to Stop Fake Agrochemicals

The EPA has revised the *Regulated Toxic Chemical Substances and Matters Concerning Their Handling and Management* (列管毒性化學物質及其運作管理事項) in order to tighten handling and management of organotin compounds. It is part of the joint efforts between the EPA and the Council of Agriculture (COA) to stop fake agrochemicals. The revisions were done to prohibit the use of organotin in the manufacture of biocides, anti-fouling paints, or anti-fouling system, following the global trend of controlling it. With the new toxicity classification of organotin compounds tightened, existing enterprises will be given a buffer implementation period of six months to a year and a half in phases so as to comply with the regulations related to accident prevention and emergency response.

In 2022, an underground agrochemical factory was discovered in Yunlin, where the owner used triphenyltin chloride, a toxic chemical substance, to make a fake agrochemical known as "White Paste." Yunlin County Environmental Bureau found out that between 2019 and 2021 the owner had brought into the country 33.5 metric tons of triphenyltin chloride and did not report its operating records in accordance with the *Toxic and Concerned Chemical Substances Control Act* (毒性及關注化學物質管理法). Besides issuing fines and voiding its approval documents for operating toxic chemical substances, the environmental bureau handed the owner over to the prosecutor's office for further investigation on the grounds of false registration and possible falsification documents.

As part of the joint efforts to prevent harmful use and abuse of organotin compounds, the EPA has studied international control efforts, looked into its domestic handling, and consulted experts and scholars. Limits concerning ten organotin compounds, such as tributyltin oxide bis(tributyltin) oxide and triphenyltin chloride, are further adjusted. To strengthen controls of organotin, their use is now banned in the manufacturing of biocides, anti-fouling paints, or anti-fouling systems. Moreover, the EPA has updated information on these substances by adding the Chemical Abstracts Service Number (CAS No.) of triphenyl-α-naphthyltin, tripropyltin fluoride, tritolyltin bromide and tritriphenylstannyl-methane, and adjusted the toxicity classifications of organotin compounds like tributyltin oxide bis(tributyltin) oxide and triphenyltin hydroxide..

Meetings were held in October 2022 since the announcement of the amendments, and enterprisers are given a buffer implementation period of six months to a year and a half in phases. This is done as adjustment of toxicity classification of organotin compounds affects regulations on transportation of these substances, detection and alarm equipment, and placement of professional response technicians, and changes of licenses. Not only so, in line with a full asbestos ban in Taiwan, registrations and approval documents for all uses of organotin compounds, except for research, experiment and education, have all expired in their validities, hence relevant regulations were revised as well.

11. Revisions Preannounced for Regulations Regarding Environmental Agent Professional Technicians

On 3 March 2023, the EPA amended the *Regulations Governing the Employment of Environmental Agent Professional Technicians* (環境用藥專業技術人員設置管理辦法). This is done in response to the digitization of employment concerning environmental agent professional technicians, and the goal in the future is to integrate and align management of

professional technicians in environmental protection as well as others in other fields of expertise.

Promulgated first in 1998, the Regulations have been revised four times with the most recent one announced on 29 June 2016.

The aim of the amendment this time is to align management of environmental personnel with that for professional technicians as applications will be processed online for employment of environmental agent professional technicians. References for the revisions include the *Regulations Governing the Employment and Management of Responsible Units or Personnel for Wastewater Disposal* (廢(污)水處理專責單位或人員設置及管理辦法).

Highlights of the revisions include enhancement of the system concerning substitutes representing professional technicians, in which it is modified that one having taken training for the same categories of professional technicians are qualified to substitute. There are clearly set regulations concerning prohibited behaviors and business operators' management responsibilities, and clearly specified scopes of responsibility. In addition, penalties are in place for violation concerning training and how operations are conducted, and the revisions also include what regulations can be applied in terms of management of records of leaves and employment of environmental agent professional technicians. All of them aim to improve management of professional technicians in this field.

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R. O. C. (Taiwan)

Publisher
Tzi-Chin Chang, Minister

Editor-in-Chief
Tsung-Yung Liu

Executive Editors
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