Environmental Policy Monthly
Environmental Protection Administration, R.O.C. (Taiwan)
ISSN: 1811-4008 GPN: 2008600068
The EPM is available at http://www.epa.gov.tw/environmentalpolicymonthly

Feature Article

Ten Years of Pollution Investigations at Unused Factories

To protect soil and groundwater, thorough investigations of unused factories and assessments of in-situ pollution – followed by site remediation – are necessary. To this end, since 2004 the EPA has surveyed 120,000 unused factories, of which 740 were deemed to be potentially highly polluting. To date, the EPA has conducted in-depth investigation on 175 factories with high polluting potential and has found pollution in 102 of them. The EPA plans to carry out the in-depth investigation on another 500 high polluting potential factories. To improve the efficiency of screening for pollution potential, the EPA has established an environmental risk screening mechanism and a management platform. Combined with a geological information system, the investigation results can be instantly uploaded on the management platform. In the future, to bring about sustainable land use the EPA will accelerate remediation of contaminated sites, strengthen self-regulation of enterprises, and enhance pollution control at source.

As a part of the task of managing pollution at unused factories, since 2004 the EPA has been conducting surveys and assessments on all of Taiwan's 120,000 or so unused factories and has selected 740 that are potentially highly polluting. From 2004 to August 2016, the EPA completed pollution investigations at 175 factories and found serious pollution at 102 of them, a discovery rate of 58%. The EPA expects to complete surveys of another 500 of the 740 factories that have been found with high polluting potential within the next three years.

Surveys of High Pollution Potential Factories Expected to Complete within Three Years

For the surveys, the EPA first screened approximately 42,000 potentially polluting factories from the industry categories that have known pollution problems.

In This Issue

Using standardized survey procedures and technical manuals, EPA inspectors gathered basic data that was used to facilitate investigation of actual pollution conditions at unused factories, including data on original facilities and the impacts on sensitive receptors in the surrounding environment. The investigation allowed the EPA to select 3,500 factories and assign a color code to each one according to severity of pollution.

For the 2,200 factories deemed to be in the high- or medium-risk categories, the EPA conducted environmental assessments that included on-site surveys, collection of information on the factories, and interviews of staff and local residents. The assessments have allowed the EPA to gain a clear picture of potential pollution sources, types of pollution, and pollution distribution at the sites. After screening, 175 sites were selected for in-depth investigation, of which 102 were found to have soil or groundwater pollution, a discovery rate of 58%.

Analysis of the pollution survey statistics showed that of these 102 polluted factory sites, 88 have soil contamination, six have groundwater contamination, and eight have both soil and groundwater pollution. The soil contamination was mainly due to the presence of heavy metals, with total petroleum hydrocarbons playing a secondary role. The groundwater pollution was mainly due to volatile organic chemicals followed by heavy metals.

Following the EPA's active surveying of unused factories, there remain around 500 factories deemed to be in the high- or medium-risk categories. The EPA will compile information and classify the factories according to risk level before handing the cases over to local competent authorities for further investigation. The EPA expects to complete investigation of the 500 factories within the next three years.

Following assessment and screening, the owners of factories where pollution was discovered will be notified to carry out remediation. Under the supervision of environmental agencies, 71 such polluted sites have already been removed from the control list after completing remediation, which also prevents pollution from spreading into the wider environment. Of the 31 polluted sites still under remediation, the supervising environmental agencies will continue to do remediation work, and all said sites are expected to be removed from the control list within five years.

From January to August of 2016, the EPA carried out investigations at the potentially highly polluting factories, of which 15 have been penalized by their local environmental protection bureaus. The EPA will continue to monitor the pollution status of manufacturing operations at all potentially high- or medium-risk factories. The EPA will also speed up its program of contaminated site remediation, as well as demand more pollution self-regulation from Taiwan's enterprises.

Pollution Control and Risk Screening for Soil and Groundwater Protection

The many years of inspections and surveys have led to the formation of a comprehensive environmental risk screening and management platform which works in tandem with pollution control measures. Industrial activity is the main cause of soil and groundwater pollution and the form that such activity takes can change quickly. Factories can be moved to other locations, or may suspend or halt operations, and thus leave waste untreated and premises unmanaged. Sites may also be released for redevelopment, all of which can cause pollution to be spread.

To effectively manage unused factories, Articles 8 and 9 of the *Soil and Groundwater Pollution Remediation Act* stipulate that from 2005, announced enterprises that wish to move premises must undergo soil and groundwater pollution assessment investigation and testing before closing the original factory and applying for a new license. To ensure the quality of investigation and pollution prevention at industrial sites, the procedures must include on-site inspections by qualified inspectors, testing results produced by a certified environmental laboratory, and certification by a professional environmental engineer.

To date, the system of soil and groundwater pollution assessment investigation and testing for industrial sites has resulted in over 5,000 cases being reported. Of these, the main polluted sites have involved metal plating, petrol stations, and the printed circuit board industry (51%), the premises of which cover a total land area of over 47.88 million square meters. Of these 5,000 cases, 68 involved instances of testing values exceeding stated maximums, some involved

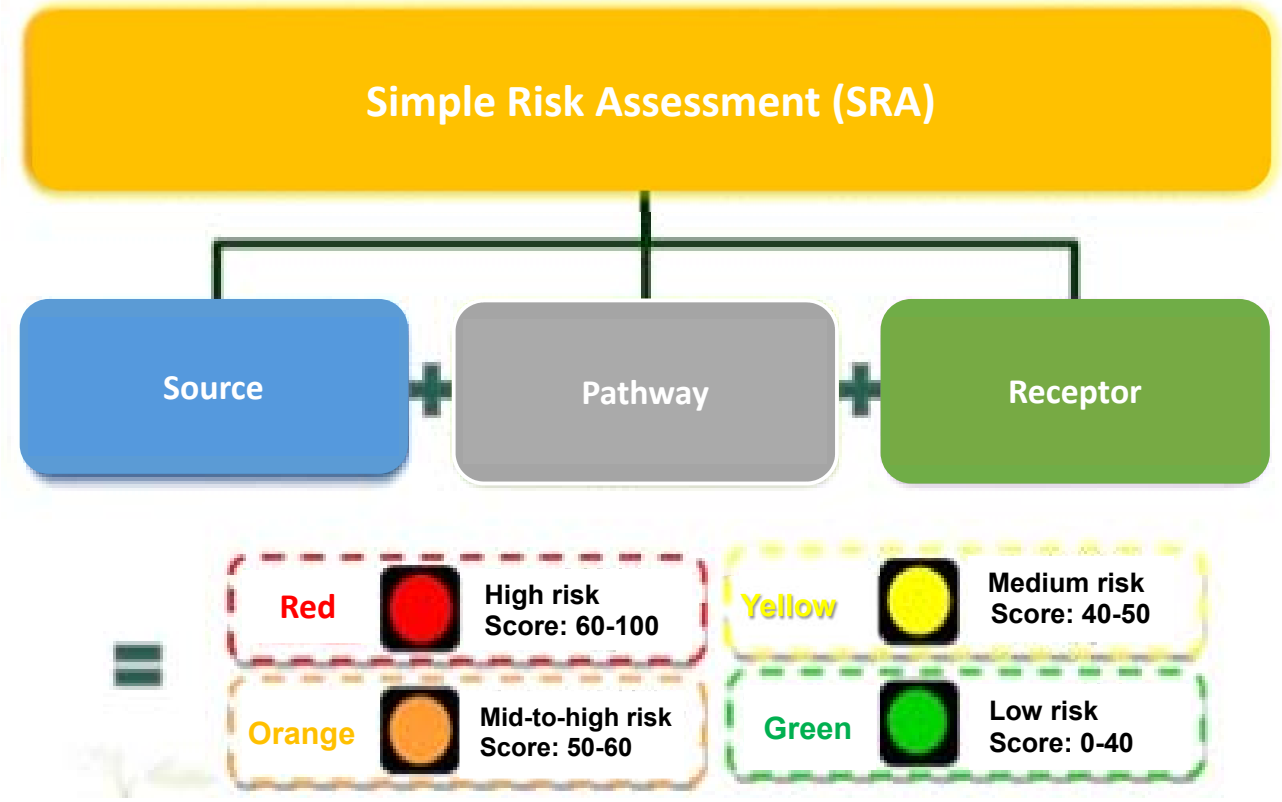
operators protecting their rights, and some involved future business operations testing for pollution before renting out premises so as to protect themselves from liabilities stemming from the pollution. This shows that the system also has an early alert function that helps protect soil and groundwater.

The environmental risk screening and management platform for unused factories produces pollution potential risk assessments based on parameters such as the registered area of the original premises, the number of years of operation, the nature of the business, transmission routes for on-site pollution, and risk level for pollution receptors. It produces a pollution potential map to which data from on-site surveys can be added. The platform has been awarded two patents by the Intellectual Property Office of the Ministry of Economic Affairs (MOEA), titled: "Factory Environment Risk Screening Method," and "Unused Factory Environment Risk Screening System."

Unused factories are spread across Taiwan. To improve administrative efficiency and quality, the EPA has successfully developed a supplementary system that allows inspectors to upload field data instantly from the sites. This system also has a patent titled "Spatial Information Processing and Output System, Computer Program Product and Methodology for Environmental Site Assessments" issued by the Intellectual Property Office of the MOEA. Using the above tools, the EPA has reached its management goals for contaminated factory sites as "pilot demonstrations in the short-term, full control of pollution statuses in the medium-term, and efficient management for the long-term."

Future Outlook

The EPA's survey program of unused factories has now been running for over ten years. The continued cooperation between central and local governments has yielded many achievements and much useful experience. The first stages of the program have been completed, and the EPA will be building upon them to expand the program to all polluted factory sites around Taiwan. The EPA will seek to strengthen self-regulation among the enterprises concerned and promote the use of environmental liability insurance. The system of self-surveys for enterprises listed under Articles 8 and 9 of the *Soil and Groundwater Pollution Remediation Act* has proven to be effective.



The environmental risk screening mechanism for unused factories

The EPA will conduct preventative supervision and management in regions to ensure that survey resources are used efficiently and that pollution control is implemented thoroughly, so as to reach the goal of sustainable land management.

Air

Amendments to Subsidy Regulations for Scrapping Two-stroke Motorcycles and Purchasing New Two-wheeled Electric Vehicles Preannounced

To understand the distribution of carbon dioxide and atmospheric pollutants in the Asia-Pacific region, in 2012 the EPA began working with the EU and National Central University using Evergreen Line container ships to monitor greenhouse gases around the Pacific Ocean. Later in 2012, China Airlines was invited to join the observation effort. On 6 September 2016, the EPA, National Central University, and China Airlines jointly held a ceremony to launch the participation of a second China Airlines aircraft in international atmospheric CO_2 monitoring.

The EPA has drawn up a draft of amendments to the *Regulations Governing Subsidies for Scrapping Two-stroke Motorcycles and Purchasing New Two-wheeled Electric Vehicles*（淘汰二行程機車及新購電動二輪車補助辦法）. The changes include extending the period of subsidies for three more years until the end of 2019; reducing the subsidy amounts year-on-year; ending the subsidies for buying electric two-wheeled vehicles that have lead-acid batteries in 2017; and ending the subsidies for scrapping two-stroke motorcycles in 2020.

The EPA points out two-stroke motorcycles are highly polluting, producing 18 times the amount of hydrocarbon emissions and two times the carbon monoxide (CO) emissions that of 4-stroke motorcycles. To encourage the public to scrap their two-stroke motorcycles, the EPA will continue to offer subsidies for the scrapping of two-stroke motorcycles and the purchase of new electric two-wheeled vehicles.

Table: Subsidies for Scrapping Two-stroke Motorcycles and Purchasing New Two-wheeled Electric Vehicles (draft)

Subsidy Period		Electric Motorcycles			Electric bicycles	Electric-assisted bicycles
		Heavy electric Motorcycles	Light electric scooters	Small light electric scooters		
Subsidies from central competent authority	1 January 2016 - 31 December 2017	NT$7,000	NT$5,000	NT$5,000	NT$5,000	NT$5,000
	1 January 2018 - 31 December 2018	NT$6,000	NT$4,000	NT$4,000	NT$4,000	NT$4,000
	1 January 2019 - 31 December 2019	NT$5,000	NT$3,000	NT$3,000	NT$3,000	NT$3,000

To reduce pollution caused by two-stroke motorcycles, the EPA has been gradually tightening emissions standards by putting an end in 2004 to the manufacture and sale of new two-stroke motorcycles. Two-stroke motorcycles currently on the roads fall under a subsidy regime implemented by the EPA in 2008. Ministry of Transportation and Communications (MOTC) vehicle registration statistics indicate that as of the end of July 2016 there were still 1.305 million scooters more than 13 years old registered, of which most are two-stroke. The EPA has thus decided to continue offering financial incentives to encourage members of the public to scrap their old two-stroke motorcycles. Considering that electric two-wheeled vehicles are eco-friendly – producing no emissions and less noise than conventional combustion engine motorcycles – and thus worthy of being promoted, the EPA has decided to continue to provide a subsidy to encourage the public to buy them.

The main points of the amendments are to extend the subsidy period to 31 December 2019, and to make some adjustments according to feedback received from stakeholders. In addition, as of 2017, electric two-wheeled vehicles (scooters and bicycles) with lead-acid batteries will not be eligible for subsidies. The regulation governing the advance payment of subsidies by electric two-wheeled vehicle makers and retailers has been removed, and from 2020 the subsidy for scrapping two-stroke motorcycles will also be dropped.

EIA

New EIA Measures Announced for Implementation of Geology Act

The *Geology Act*（地質法） has now been in force for nearly five years, and on 21 September the EPA announced new environmental impact assessment (EIA) measures for development projects located in geologically sensitive areas announced by the Ministry of Economic Affairs (MOEA). In addition to the EIA review committee composed of members specializing in topography and geology, the MOEA's Central Geological Survey will be invited to assist with reviews. The EPA will also commission professional organizations with professional engineers to provide expert opinions as references for the EIA review committee.

Located on the junction of the Eurasian Plate and the Philippine Sea Plate, Taiwan is subject to the frequent tectonic activity in its region of the Pacific Ocean. A major earthquake in central Taiwan on 21 September 1999, registering 7.3 on the Richter scale, reminded the public of the need for natural disaster preparedness, which includes policies for pre-disaster risk prevention and post-disaster response.

According to the *Geology Act* that has been in force since 1 December 2011, a land development activity site that is in whole or in part within a geologically sensitive area, shall first undergo a geological site investigation and geological safety assessment before an application for land development is filed. The regulations also stipulate that the documents and diagrams sent for review should contain survey and assessment results. Development activity will thus henceforth be governed through a combination of relevant regulations such as those concerning environmental impact assessments; land use and rezoning; soil and groundwater conservation plans; and the *Building Act*（建築法）.

To comply with the *Geology Act,* environmental impact assessments (EIA) for development projects proposed in geologically sensitive areas announced by the Ministry of Economic Affairs (MOEA) will be reviewed by an EIA review committee that includes specialists in topography and geology, and the MOEA's Central Geological Survey will also be invited to assist. Also, in accordance with the *Geology Act*, professional organizations that have members who have duly obtained certification as professional engineers in the corresponding disciplines shall be commissioned to provide expert opinions for the reference of the EIA review committee. The professional organization's report shall be included as an appendix to the EIA statements.

While using this opportunity to explain the connection between the *Geology Act* and the environmental risk assessment review, the EPA also reminds developers to take great care when selecting sites for development. Development in geologically sensitive areas should be avoided to prevent major disasters. The EPA also urges all government agencies to fully implement regulations under their jurisdiction and shoulder their responsibilities for natural disaster prevention and environmental protection.

Air

Stricter Petrol Vehicle Emission Standards Preannounced

On 9 September 2016, the EPA preannounced the *Sixth Phase of Petrol Vehicle Emission Standards*（第 6 期汽油汽車廢氣排放標準）, another step along the road to tackle vehicular air pollution. The sixth phase will begin on 1 September 2019, and existing vehicle models will be given a grace period of one year to allow owners to adjust to the new regime.

To improve air quality, the EPA continues to tighten the *Vehicular Air Pollutant Emission Standards*（車輛廢氣排放標準） and preannounced the *Sixth Phase of Petrol Vehicle Emission Standards*. The tightening of standards is important for managing vehicle emissions and keeping Taiwan's regulations in line with international environmental protection trends, while also stimulating domestic enterprises to develop, manufacture, or import eco-friendly vehicles that use the latest pollution control technologies. The EPA examined the EU Euro 6 emission controls before drafting the amendments to Article 3 of the *Vehicular Air Pollutant Emission Standards*（交通工具空氣污染物排放標準）.

The main points of the amendments involve tightening of pollutant controls and stricter regulations for importing in-use vehicles, as outlined below:

・Adding new regul ations, the *Vehicular Exhaust Air Pollutant Emission Standards for Petrol and Cleaner Alternative Fuel Engine Vehicles*（汽油及替代清潔燃料引擎汽車排氣管排放空氣污染物標準）will take effect on 1 September 2019. Parallel systems will be maintained whereby Euro 6 vehicular emission standards and testing procedures will be applied, along with the worldwide harmonized light vehicles test procedures (WLTP) as well as recognizing US car emission standards and their Tier 2 Bin 5 testing procedures.

・The unit of measurement for pollutant amounts has been changed from grams (g) to milligrams (mg).

・The particulate matter (PM) limit has been tightened from 5.0 mg/km to 4.5 mg/km.

・Particle number (PN) controls have been added, at 6 x 1011 #/km.

・Imported in-use vehicles, regardless of the year of manufacture, should meet driving cycle test standards and idel test standards used for new vehicles. A grace period of three months from the date of announcement will be given to importers.

・The amendments will take effect on 1 September 2019, and existing vehicle models will be granted a one-year grace period.

Water

Oil Spill Cleanups Proceed in Kinmen and Kaohsiung

Typhoon Meranti recently passed over Taiwan, causing ships to run aground in Taiwan's maritime territory: One on the southwest coast of Kinmen Island and two at Xiziwan, Kaohsiung City. The EPA diligently monitoried the emergency response efforts and was in close contact with other relevant ministries and the local governments involved, collaborating and providing assistance as necessary in order to eliminate marine pollution and potential marine pollution as soon as possible. On 18 September 2016, EPA Minister Ying-Yuan Lee visited Kinmen County and inspected the affected coastal area along with Magistrate Fu-Hai Chen and Members of the Legislative Yuan.

During his visit to Kinmen, Minister Lee promised the EPA's full assistance to the Kinmen County Government to clean up the spilled oil and eliminate the threat of further marine pollution from the China-registered ship, the Gang Tai Tai Zhou, that ran aground along the southwest coast of Kinmen Island. To minimize the chance of oil from the ship causing environmental damage, the Coast Guard Administration maintained a ring of oil booms on the sea around it. Oil booms were also attached to the ship's hull as wind and tide conditions dictated.

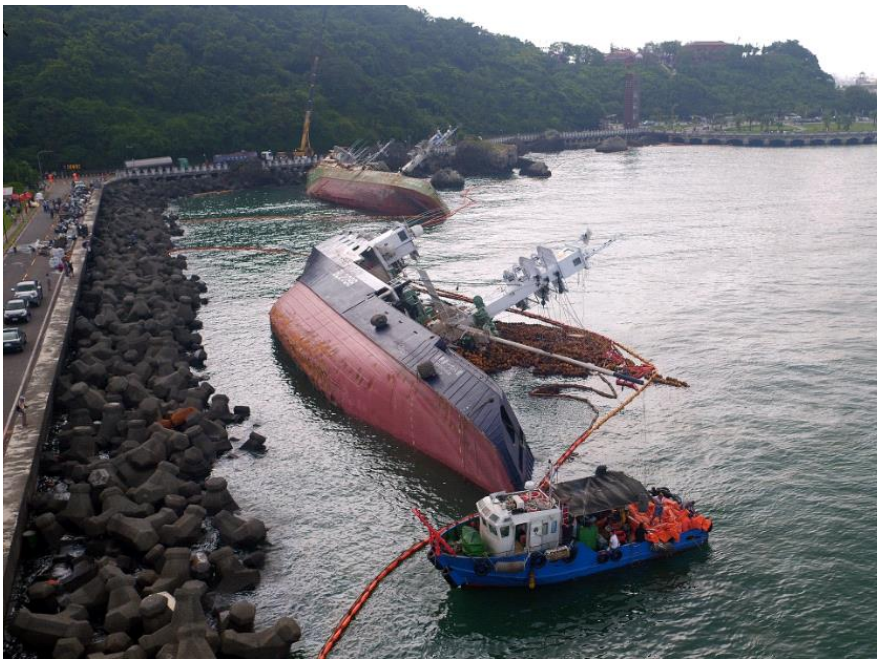
The EPA continued to supervise the oil spill cleanup operation for the Gang Tai Tai Zhou. The Xiamen City Maritime Affairs Bureau dispatched two workships to remove remaining oil from the ship itself, and three high-pressure cleaning machines were brought in to clean the nearby reefs. According to updates from the Kinmen Emergency Response Center, the Chinese crew pumped 25 tonnes of diesel and 2.5 tonnes of lubricant from the ship. The next stage is to remove any remaining oily water and clean up the coastal area before restoring the reef environment to its original condition.

The EPA also employed unmanned aerial vehicle (UAV) technology to conduct aerial monitoring of the area, and the most recent images confirmed that there is no new spillage of oil. On 23 September, the Coast Guard Administration held the 7th Gang Tai Tai Zhou Grounding Response Meeting, during which the Kinmen County Government urged the ship's owner to quickly implement pollution control measures and explain how they would deal with the oily waste. In addition, the EPA promised to continue giving its full assistance to the Kinmen County Government to clean up the oil spill as soon as possible.

At Xiziwan, two fishing vessels, the Shuntian 606 and the Yongxingfa 168, spilled oil after running aground. The Port of Kaohsiung, under the Taiwan International Ports Corporation, already removed some oil from the sea, coast, concrete breakwaters, and reefs in the harbor and restored the area to its original condition. Residual oil from the two vessels had been removed and the cleanup verified. The task of hauling the vessels out of the area will soon be undertaken by the owners under the supervision of the Port of Kaohsiung. The owners have submitted a vessel removal plan, also being reviewed by the Port of Kaohsiung, and once approved, the vessels will be removed, allowing the Xiziwan coast to be restored to its original state.

The EPA is keen to stress that all agencies involved in the cleanup and emergency response efforts should put personnel safety first. With close cooperation and concerted efforts between central and local governments in dealing with these grounding incidents, the EPA hopes that the cleanup will be successful in protecting the marine ecosystems of the two areas.

EPA Minister Ying-Yuan Lee explains the oil spill emergency response to members of the media in Kinmen.



The fishing vessels that ran aground at Xiziwan, Kaohsiung City

Environmental Inspection

Illegal Gains Confiscation Continues for Environmental Justice

Since 2011, the EPA has been actively pursuing enterprises that have made illegal gains through violating environmental regulations. As of the end of August 2016, the EPA has issued penalties in 84 such cases and fines totaling NT$836.637 million have been levied. The EPA will continue to track down and confiscate illegal gains made through violating the law, and is urging all enterprises to fully abide by environmental regulations to avoid being punished.

There have been frequent cases of unscrupulous operators violating environmental regulations in recent years, but members of the public are usually not aware of such odious behaviors until the hazards reach more threatening levels. Operators, however, can often make illegal gains that far outstrip the fines they pay, causing a great sense of injustice among the public. Some such operators still believe that if the fines are lower than the costs of preventing or dealing with pollution, then they are better off not investing in pollution control facilities, to the great detriment of the environment. To address the issue, the EPA has amended regulations to allow for much heavier fines and has also formulated regulations to allow it to confiscate illegal gains from violators, as indicated by the *Administrative Penalties Act*（行政罰法）. Stronger measures such as these are proving effective in protecting the environment.

According to EPA statistics, from 2011 to the end of August 2016, the EPA fined 84 cases for illegal gains, with the total fines amounting to NT$836 million, of which the largest was more than NT$436 million.

The cases of illegal gains have all involved infractions of the *Air Pollution Control Act*（空氣污染防制法）, the *Water Pollution Control Act*（水污染防治法）, the *Waste Disposal Act*（廢棄物清理法）, or the *Environmental Impact Assessment Act*（環境影響評估法）. The most common violations involve delaying investment in necessary equipment or facilities, not operating existing facilities, having facilities with inadequate functioning, not contracting licensed waste disposal operators to remove waste, and not paying the costs laid out in environmental assessment pledges.

The EPA restates that confiscating illegal gains can result in fines that are not subject to the maximum limit on fines stipulated in environmental law, and it has been shown that heavy fines do indeed reduce or prevent this type of illegal behavior. Amendments to the *Water Pollution Control Act* in 2015 clearly lay out the scope of the confiscation of illegal gains, which includes both active gains and passive gains (such as not paying costs that should be paid or paying reduced costs). The Act also now states that separate fines shall be issued for violations of regulations and for confiscation of illegal gains.

Most common violations

Violations	Violating behaviors
Inadequate monitoring	Not proceeding in accordance with the relevant EIA statement
Not operating necessary facilities	Improperly operating treatment facilities over the long-term
Exceeding permitted limits	Exceeding permitted limits
Inadequate functioning	Operating facilities/equipment that are inadequately functioning
Not establishing dedicated personnel	Not establishing dedicated personnel
Delaying investment in necessary equipment or facilities	Delaying installation of pollution prevention equipment or facilities required by regulations
Not contracting licensed waste disposal operators	Not contracting licensed waste disposal operators to remove and transport waste in accordance with regulations
Illegal disposal or dumping	Accepting or contracting illegal/unqualified waste disposal operators to transport or dump waste

Waste

Taiwan, US and Malaysia Jointly Hold International E-waste Management Network Conference

The environmental protection agencies of Taiwan, Malaysia and the US recently hosted the 6th International E-waste Management Network Conference in Kuala Lumpur, Malaysia. The conference, which concluded on 7 October 2016, was an opportunity for 48 government and non-governmental organization representatives from 17 nations in Asia, Africa, the Americas, Europe, and the Pacific Ocean to share their experiences in managing e-waste.

The Taiwan and US EPAs and Malaysia's Ministry of Natural Resources and Environment jointly held the 6th International E-waste Management Network Conference from 4 to 7 October 2016 in Kuala Lumpur, Malaysia.

Ming-Hua Hsu, Deputy Executive Secretary of the EPA's Recycling Fund Management Board, led Taiwan's team of government personnel, academics, and experts to attend the conference. During his speech given at the opening ceremony on September

21, Mr. Hsu pointed out that, to share regional policies and experiences in managing e-waste, since 2011 the Taiwan EPA has been regularly holding the International E-Waste Recycling Management Partnership Conference along with associated research activities, as a part of the Taiwan-US Environmental Protection Cooperative Agreement. He said he was delighted to see that more nations had made important changes and substantial progress in developing systems to recycle e-waste, and pointed out that some countries had adopted Taiwan's e-waste recycling system as the foundation of their own, and then tweaked it to fit local circumstances.

As in the past, on the first day of the conference delegates from each of the partnership nations reported on their nation's progress in the previous year in promoting e-waste policy and management, and also outlined their current situations. The following three days were mostly a continuation of discussion on last year's topics, focusing on the infrastructure and practical matters concerning environmentally harmless e-waste management that are much needed by many countries. Discussions also centered on management policies and administrative technology for tracking the flow of e-waste.

This network conference is one of the most important parts of the International Environmental Partnership that the EPA initiated in 2014. After the four days of discussions and experience exchanges, all delegates said that they would take what they had learned from each other back to their home countries to improve their own e-waste recycling and treatment policies and to update related legal infrastructure.

Deputy Executive Secretary Ming-Hua Hsu of the EPA's Recycling Fund Management Board speaks at the 6th International E-waste Management Network Conference

Environmental Inspection

Incineration Plant Evaluation Results Made Public

The 2015 incineration plant evaluation results have been made public, for which an award ceremony was held on 21 September 2016. Minister Ying-Yuan Lee of the EPA personally conferred the awards upon the winners, including two Excellence Awards, six Outstanding Awards, and three Special Awards.

Through supervising, random inspection and annual operational performance evaluations of incineration plants and their annual reports, the EPA has come up with an overall assessment of their performance in 2015. An award ceremony was held on 21 September 2016, with Minister Ying-Yuan Lee personally conferring awards upon the winners. The Excellence Awards were won by the Lucao

Plant of Chiayi County and the Miaoli County Plant; the Outstanding Awards were given to six plants, including the Keelung City Plant, the Chiayi City Plant, the Houli Plant of Taichung City, and the Hsintien and Bali Plants in New Taipei City. In addition, the Letzer Plant of Yilan County, the Hsinchu City Plant, and the Renwu Plant of Kaohsiung City were conferred Special Awards for their meritorious performance.

In addition to properly handling 4.3 million tons of household waste each year, the 24 waste incineration plants nationwide can also assist in the treatment of 2.3 million tons of general industrial waste. To supervise the operation and maintenance of these incineration plants as well as to enhance their operational efficiency, the EPA has been conducting annual counseling and evaluation of the incineration plants since 2001. The evaluation was gradually transformed from technical coaching to inspection and evaluation. Through the internal management of the incineration plants and the local environmental bureaus as well as the EPA's external inspections, a comprehensive inspection and review system has been established to ensure that all the plants pay high attention to maintenance and management, while enhancing the operation and pollution control technology.

As a result, even though 18 of these 24 incineration plants have been in operation for more than 15 years, they still perform well. According to the EPA, at the time when these plants were first built, the government introduced foreign technologies and now these technologies have become well established in Taiwan. Particularly worth mentioning is the fact that domestic enterprises with their excellent technology have successively participated in bidding internationally to construct or operate incineration plants, and they have successfully developed an international market.

In addition to incinerating waste, the incineration plants also cogenerate electricity using the heat produced from incineration. The power generation capacity of the 24 incineration plants reached 3.217 billion kWh in 2015, roughly 30 million kWh more than that of 2014. The total amount of electricity generated is sufficient to supply 900,000 households for a year, and the revenue from electricity generated reached NT$5.39 billion.

News Briefs

Achievements of Recycling Technology Development Showcased

On 13 September 2016, the EPA held a conference on the achievements of R&D for recyclable waste. The conference was anchored around the theme of environmental design and resource regeneration. In the conference, the EPA published the results of its 2015 R&D projects, ranging from basic R&D to product commercialization. The purpose of the conference was to promote the reuse of waste resources. Altogether 16 papers were presented on that day and 8 patent applications were filed. The EPA hoped that by holding such a conference, academia and industry can be encouraged to cooperate while more products can be commercialized and enter the marketplace.

The products on display included: rare earth metals with high purity that were recovered and purified from waste electrical appliances; automobile catalytic converters; light-emitting diode (LED) lighting sources; liquid crystal displays and spent dry batteries; porous absorbing material produced through modified and improved manufacturing processes; environmentally friendly catalysts; tiles made of regenerated materials; green polymer films; and more. In addition, a Tetra Pak and aluminum plastic bag gasification technology was developed to recover aluminum and combustible gases, which included the development of facilities that can enhance the pulping efficiency of paper containers and aluminum plastic bags. Other achievements included the establishment of parameters for the safe storage of used environmentally friendly refrigerants, and the enhancement of effluent reduction from spent lead-acid battery treatment plants.

The EPA hopes that these achievements will contribute to the development of a circular economy, reduce the exploitation of raw materials, and become a driving force for promoting the sustainable use of resources.

Amendments to Vehicular Air Pollutant Emission Standards Preannounced

As per the EPA, the preannounced amendments to the *Vehicular Air Pollutant Emission Standards*（交通工具空氣污染物排放標準） were mainly to comply with the incidental resolutions that the Legislative Yuan made when the *Greenhouse Gas Reduction and Management Act*（溫室氣體減量及管理法） was adopted. That is to say, after the implementation of this Act, the reduction and management of greenhouse gases will be enforced in accordance with the provisions of the Act and will no

longer be controlled by the *Air Pollution Control Act*（空氣污染防制法）.

To effectively control greenhouse gases, on 13 December 2013 the EPA announced the amended *Vehicular Air Pollutant Emission Standards*, to which standards for CO_2 emitted from vehicles were added in Article 9. The first phase control target was passenger cars. EPA statistics compiled in 2016 showed that the average CO_2 emission level for a passenger car was 162.48 g/km, which was 15% lower than the standard of 191 g/km set by the 2009 Framework of Taiwan's Sustainable Energy Policy. It proves that Taiwan has achieved the period target. Since vehicular CO_2 emissions are no longer controlled by the *Air Pollution Control Act,* the EPA decided to delete the provisions of Article 9 of the *Vehicular Air Pollutant Emission Standards,* which was formulated in accordance with the *Air Pollution Control Act.*

Revocation of Quota on New Motorcycle Exhaust Testing Stations Preannounced

On 23 September 2016, the EPA preannounced amendments to the *In-use Motorcycle Exhaust Emission Testing Station Establishment and Management Regulations*（使用中機車排放空氣污染物檢驗站設置及管理辦法）. The main idea of the amendments was to do away with the restrictions on the number of testing stations to be installed. In the future, the location and service scope of testing stations will be expanded to enhance the convenience for the public, while information on the channels for submitting applications will be made more transparent. EPA statistics showed that the growth of the number of testing stations has slowed down in the last five years, but the demand remains strong, especially for owners who reside in remote areas. Owners in remote areas often have difficulty finding a testing station, thus their willingness to take their motorcycle in for a test is greatly diminished. In view of this, the EPA is considering the abolishment of quotas on the number of new testing stations under the *Exhaust Emission Testing Station In-use Motorcycle Exhaust Emission Testing Stations*（使用中機器腳踏車排放空氣污染物檢驗站增設原則）, which was announced in 2004. In the future, any motorcycle shop which has the intention to conduct motorcycle exhaust emission testing can file an application to do so. Once approved by the local competent authorities, it can carry out the test in accordance with regulations.

Liberalized regulations on motorcycle exhaust testing stations will allow more outlets

Environmental Policy Monthly
R. O. C. (Taiwan)

Publisher
Ying-Yuan Lee, Minister

Editor-in-Chief
Shyh-Wei Chen

Executive Editors
Shiuan-Wu Chang; Yu-Ling Yang;
Shao-Wen Chang; Jason Hoy

Translator
Peter Morehead

Editorial and translation support provided by:
Hui-Kuo Consulting, Ltd.

For inquiries or subscriptions to the printed version, please contact:

Environmental Policy Monthly
Environmental Protection Administration
Office of Sustainable Development

83, Sec. 1, Jhonghua Rd.,
Taipei 100, R.O.C. (Taiwan)

tel: 886-2-2311-7722, ext. 2211
fax: 886-2-2311-5486

行政院新聞局出版登記證局版北市誌字第 1611 號
中華郵政北台字第 6128 號執照登記為雜誌交寄