



# Major Environmental Policies

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

<http://www.epa.gov.tw>



## Air Quality

## Ozone-depleting Substance Reduction Strategies and Results in Taiwan

On its work in controlling ozone-depleting substances (ODSs), Taiwan has always abided by the Montreal Protocol to align with the pace of advanced countries in cutting down ODS production and consumption. Both the government and industries have successfully achieved the protocol's production and consumption limits by formulating reduction strategies accordingly. For instance, Taiwan has reached zero halon (haloalkane) consumption since 1994.

### Reduction plans

Taiwan has placed on its regulatory list all of the ODSs listed in the Montreal Protocol's Annexes A, B, C, and E. In 1993, these substances were announced for control in the *Regulations Concerning Control of Chemical Substances Listed for Control by the Montreal Protocol* (管制蒙特婁議定書列管化學品作業要點) composed by the Industrial Development Bureau (IDB) of the Ministry of Economic Affairs (MOEA).

Chemicals, divided into nine major categories, have also been added to the regulatory list afterwards, based on the Montreal Protocol's

agreements. The Chemical Substances Control List has detailed categorizations, substance names, chemical formulas, and their potential ozone-depleting index.

On the production or consumption of regulated chemical substances, the Montreal Protocol sets different reduction plans that include:

<Baseline level> usually, a regulated chemical substance's production or consumption amount in a specific year

<Freezing schedule> the time taken to lower a regulated

chemical substance's production or consumption amount to less than the baseline amount

<Reduction percentage> the time taken to lower a regulated chemical substance's production or consumption amount to a certain percentage of the baseline amount

<Conditions for exemption> conditions in which chemical substances can be exempted from production or consumption regulations

According to Montreal Protocol regulations for developed countries (Non-Annex V countries), Taiwan's

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National Complete Reduction Schedule has been formed based on the focuses above. Other relevant reduction measures are also set based on these focuses.

### Reduction progress

Out of the Montreal Protocol's regulated chemical substances, Taiwan only produces hydrochlorofluorocarbons (HCFCs) in Production Table C under Category 1. The production freezing schedule of substances in this category began in 2004, so Taiwan's past control of HCFC production complied with the Protocol.

Formosa Plastics, the only manufacturer of HCFCs in Taiwan, stopped producing HCFC-141b and HCFC-142b in 2004. Its production of HCFC-22 only reached 80 ozone-depletion-potential (ODP) tons of HCFC-22 in 2005, and all

production has been terminated as of June 2005. It marked the end of Taiwan's HCFC and ODS production in 2006.

For consumption, the government and industry have been working hard to meet the Montreal Protocol's requirements. Consumption goals for many chemical substances were reached before 1996. Significant moments in the reduction journey include:

- halon has been at zero consumption since 1994
- consumption of methyl bromide has been regulated since 1 Jan 1995
- CFCs, carbon tetrachloride, and 1,1,1-trichloroethane have been below-zero consumption since 1996
- HCFC allocations became effective on 1 Jan 1996 to freeze their consumption, set to reach

zero by 1 Jan 2030.

### Reduction results: Analysis of ODS consumption in 2019

Complying with the Montreal Protocol, Taiwan has reported its ODS consumption data to the UN since 1994, which is the total of imports plus production minus exports.

Taiwan's CFC consumption has been at zero since 1996, the level required of parties to the Montreal Protocol. That year HCFC consumption was also frozen, stopping at 84% of Taiwan's baseline level. National HCFC consumption was 382.51 ODP tons in 2004 (65% of the baseline level required by the protocol), 152.56 ODP tons in 2020 (25%), and 59.35 ODP tons in 2015 (10%). The 63.119 ODP tons of HCFC consumption in 2019 was 0.680 ODP tons less than that in 2018.

The annual imports of methyl bromide are shown in Image 2.

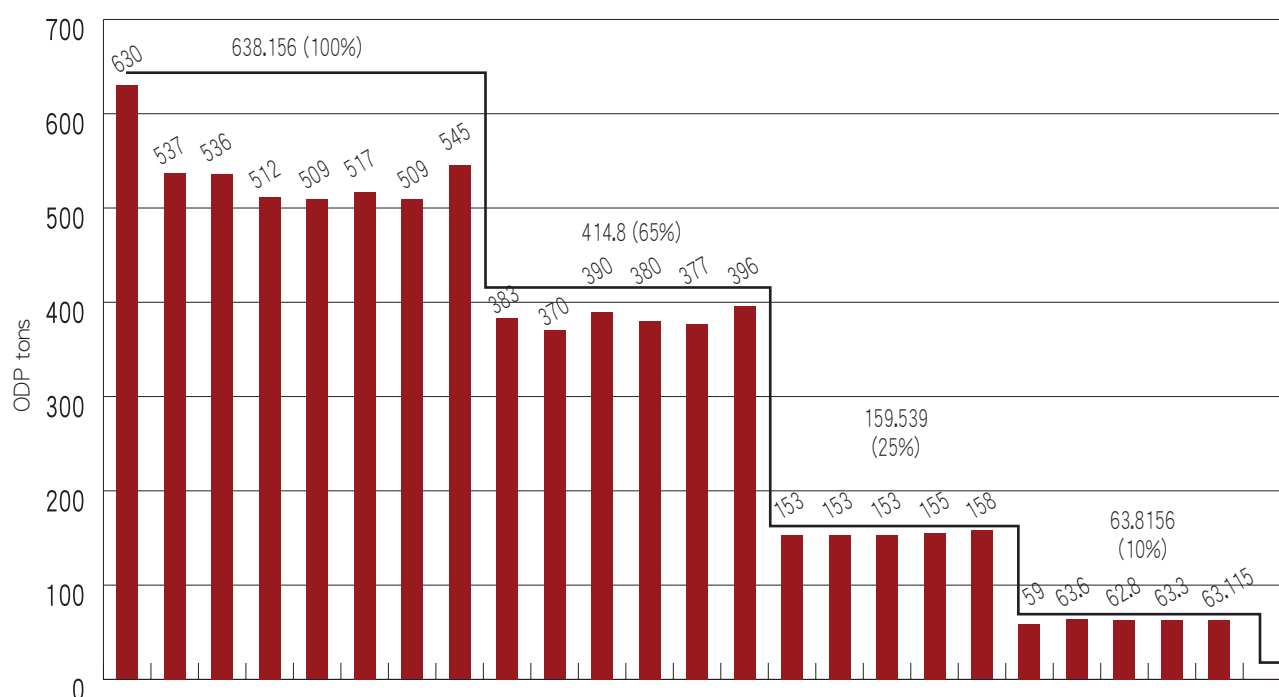


Image 1: Taiwan's annual consumption of HCFCs



Image 2: Taiwan's annual imports of methyl bromide

Image 1 shows Taiwan's declining consumption of HCFCs over the years.

Measures to effectively cut down consumption include allocations and bans for specific uses in different stages. Effective bans so far include: all types of HCFCs in aerosol propellants and foaming agents in manufacturing processes; HCFC-141b in solvents or cleaning agents in the manufacturing processes; filling HCFC-22 coolants in the manufacture of new refrigerating or

air conditioning equipment or new construction; and so on. Moreover, HCFCs have been banned since 1 Jan 2020 as coolant fillings in the manufacture of new refrigerating and air conditioning equipment and new construction. The goal was to lower the consumption to 0.5% of the baseline level and restrict its applications. Such practices will result in much fewer imports and limit the demand from domestic refrigeration and air conditioning equipment, leading to further reduction.

Regarding production of ODSs, Taiwan has stopped producing CFCs since 1996 and HCFCs and all ODSs as of 2006. As for imports in 2019, 1039.223 metric tons (56.497 ODP tons) of HCFC-22, 320.000 metric tons (6.520 ODP tons) of HCFC-123, small amounts of HCFC-124 (4.360 metric tons, or 0.096 ODP tons) and HCFC-225 (0.250 metric tons, or 0.006 ODP tons) were imported.

In 2019, Taiwan exported 12 metric tons (0.660 ODP tons) of HCFC-22, 7 metric tons (0.385 ODP tons) more than it did in 2018. The continuous export of HCFC-22, even with reduced domestic production, is estimated to be used for maintenance and coolant refills of refrigerating equipment on board fishing vessels operating offshore. On the other hand, methyl bromide imported after 1999 has been used only for quarantine and pre-shipment (QPS) purposes. There were 28.826 metric tons (12.616 ODP tons) imported in 2019, 20.276 metric tons less than in 2018.

## Environmental Management

# National Disinfection Crew Intensifies Efforts as COVID Cases Skyrocket

**T**he Central Epidemic Command Center (CECC) recently raised the epidemic alert level to Level 3. In response to the increasing severity, the EPA stated that regional environmental bureaus from 22 cities and counties were called to a video conference on disinfection. Crews are ready at all times and have launched massive and thorough disinfection measures to safeguard public health.

To date, environmental bureaus across Taiwan have assigned a total of 3,000 personnel to conduct disinfection tasks. Since the pandemic started, disinfection work has continued in public venues where crowds gather. The crews can be seen carrying disinfection equipment, especially

during holidays such as Lunar New Year when people travel to their hometowns, or before the start of school and after entrance exams for technical and vocational schools.

The COVID pandemic has been worsening recently, with local

cases with unknown sources popping up in several counties and cities. In light of this, the crews dare not let their guard down, doubling disinfection efforts at locations where the known infected cases have been to, in New Taipei City, Taipei City, Yilan County, Kaohsiung City, Changhua County,

and Keelung City. Additionally, the Taipei City Environmental Bureau has increased the disinfection frequency from once a week to twice a week. The statistics up to 28 May show that there are 8,065 sites on the list of crowded places under control. Aside from intensified disinfection efforts from local environmental bureaus, the EPA also urges the public to follow the CECC's instructions in this period of heightened pandemic alert.



📍 Taipei City Environmental Protection Bureau staff disinfect the areas surrounding confirmed cases.

## Chemicals

# Ammonium Nitrate and Hydrofluoric Acid Listed for Control as Harmful Chemical Substances of Concern

**T**he EPA preannounced in early April 2021 that ammonium nitrate and hydrofluoric acid have been added to the list of concerned chemical substances. Relevant controls concerning handling were announced based on the substances' characteristics and uses in the nation. In addition to listing them as chemical substances of concern with harmful effects, the preannouncement also signals the start to strengthened controls over potential risk areas where accidents may occur, such as the import, manufacture, use, storage, transportation and sale of these substances.

The EPA pointed out that with different agencies responsible for managing ammonium nitrate and hydrofluoric acid, tracking of the flow of these substances and accident prevention and response is not well-regulated. After listing the two substances for control, the EPA will track them properly and gather complete data on their importation, transportation after they enter the country, storage, manufacture, use and management by enterprises. The aim is to have all departments working together, with individual delegated responsibilities, to manage the two substances.

Ammonium nitrate is often used in the production of agricultural fertilizers, dynamite, and explosives for mining. But improper storage and management can lead to

accidents, such as the large blast in the port of Beirut, Lebanon in August 2020. Ammonium nitrate is also a raw material for nitrous oxide (laughing gas), the first chemical substance of concern announced and listed for control. Highly pure laughing gas can be generated after ammonium nitrate goes through thermal decomposition, so proper management of ammonium nitrate simultaneously constitutes proper management of a main precursor substance for laughing gas production.

Hydrofluoric acid can be made by adding water to hydrogen fluoride. Due to its corrosive properties, it is widely used in the etching and washing of semiconductor chips and other industrial uses. The solution is also commonly called "bone-melting water" or "white

bone acid," which erodes and irritates the skin. Dermatological reactions such as pain, whitening, and reddish swelling occur when highly concentrated hydrofluoric acid contacts skin, while more severe effects include blistering and sloughing off of skin. In Taiwan, besides injuries caused by improper use, there have been multiple incidents where highly concentrated hydrofluoric acid was intentionally used in attacks. Once hydrofluoric acid is listed for control, besides the factories that use it, chemical raw material retailers and other channels that sell hydrofluoric acid shall be required to obtain approval documents to handle it in their operations, and thus risks will be reduced.



## Recycling

## Label Certifying Products Using Recycled Marine Debris Officially Launched

**W**ith marine waste intensifying as a global issue in recent years, the EPA implemented the 2020 Demonstration and Promotion Plan for Marine Debris High-Quality Recycling and Reuse. Collaboration with local environmental bureaus, civic organizations, industries, and the certification institute will demonstrate the procedures (such as tracing through documents and records) that certify products as containing recycled debris from marine environments. Relevant legislation is also on the way, as the Operation Directions for Recycled Marine Debris Product Label (the Directions) has been announced on 9<sup>th</sup> April 2021 to serve as explicit reference for mechanisms that certify products using marine waste and for related labeling regulations. It is suitable for domestic and international companies to apply for the Recycled Marine Debris Product Label, demonstrating active actions and support for preventing the impact of marine waste on the environment.

In response to international concerns about marine waste issues, the EPA promotes a Recycled Marine Debris Product Label system, and grants official certification marks to raw materials and products made from recycled marine debris, so that the public is aware of the importance of reducing marine waste. All companies or organizations are welcome to apply for label certification and do their best to fight against marine waste!

The EPA has established a recycled marine debris product verification mechanism and labeling specifications. On 9<sup>th</sup> April 2021, it issued the Operation Directions for Recycled Marine Debris Product Label to promote the Recycled Marine Waste Product Label (figure 1). The collection, classification, treatment, and production of marine waste products shall establish traceable records. After the certification institutes have issued verification statements and verification reports, the weight of marine waste has reached more than 20%, and an application shall be submitted and a label shall be given after review. There are 16 points in



Figure 1: Recycled Marine Debris Product Label.

the Directions, which detail the application procedures, evaluation, and management of Recycled

Marine Debris Product Label. The primary application documents are audit claims and reports issued by certification institutes which ensure that recycled materials come from coasts or marine environments (figure 2 and 3). Applicants that are initially approved to use the label must then comply with all the Directions and pass the evaluation. The label has been registered after being approved by the Intellectual Property Office (IPO). In its design, waves symbolize the ocean while a plastic bottle, the most iconic



Figure 2: The certification institute audits onsite to ensure that recycled materials come from coasts or marine environments.



Figure 3: The certification institute audits onsite to ensure that recycled materials come from coasts or marine environments.

marine debris item, symbolizes its dual nature as waste and at the same time as a reusable

material that can be transformed into various products after being recycled. The circular-shaped

waves holding the plastic bottle portray a circular economy.

The EPA also noted that the multiple marine-debris-related labels in recent years were products of corporations and NGOs. What is unique about the EPA's label is that it will be the first in the world to focus on marine debris, that is supported by government agencies and that certifies strict procedures and protocols. The domestic and foreign certification institutes involved are required to comply with both ISO 17065 and ISO 17021 to certify and approve the label, for use in an open and free certification market.

## Air Quality

# Indoor Air Quality Self-management Label to Be Launched in June

There has been public concern about whether small and medium-sized premises such as kindergartens, postpartum nursing centers, and childcare centers, and long-term care institutions will be included in the third batch of announced indoor air quality management premises and how they should be managed. In response, the EPA held a press conference on 13 April 2021 regarding the progress of indoor air quality self-management promotion and explained to the public that the announcement of the third batch premises would be postponed. Instead, a “self-management” labeling system was to be adopted to encourage these premises to improve their indoor air quality.

The label will be launched in June this year, and will comprise two levels: excellent and qualified. Premises that are rated “excellent” will be awarded with extra points for evaluation, have their testing frequency lengthened and testing points halved, in addition to being publicly recognized and honored.

To improve indoor air quality and safeguard citizens' health, Taiwan is the second country in the world that has legislated a law to govern indoor air quality. The

EPA adopted a gradual control approach, announcing that the first and second batches of premises would be regulated in 2014 and 2017, respectively. Premises that are frequently used by the public or that attract large crowds such as train stations, libraries, stadiums, and hypermarkets were gradually regulated. More than 1,500 premises comprising 16 categories are now regulated, accounting for more than 80% of large premises in Taiwan.

In July 2010, the EPA started to review indoor air quality management operations, and simultaneously conducted research and analysis on the third batch of premises which consisted of small and medium-sized premises to be regulated as well as the promotion of a self-management labeling system. It also held several meetings to gather public opinions. Then on 11 Dec 2010, the EPA preannounced the draft of the regulations governing the third batch of premises that must



comply with the *Indoor Air Quality Act*. In this draft, kindergartens with over 200 students, postpartum nursing centers with more than 20 beds and infant care centers hosting more than 35 infants were to be regulated. Approximately 2,200 premises in total will be affected.

➡ The Indoor Air Quality Self-management Label will comprise two levels: excellent (left) and qualified (right).



## Waste Management

# Earth Day Event focuses on Carbon and Plastic Reduction

While the world celebrated the 51<sup>st</sup> anniversary of Earth Day in 2021, excessive carbon emission and waste caused by humans' overproduction and consumption is still suffocating the Earth. In the last year, the demand for single-use products also surged due to the impact of Covid-19. To echo the theme of Earth Day 2021, "Restore Our Earth," the EPA held a press conference on "Waste Reduction, Carbon Reduction, and Green Living for Everyone: Plastic Source Reduction and Recycling", and invited the American Institute in Taiwan to participate.

Taking care of the Earth is the responsibility of every citizen in the world. Everybody is duty-bound to protect the Earth's environment. All countries are urged to work together to cool down the planet and give the planet a breather by confronting the global warming crisis and taking actions to mitigate climate change. Due to the impact of Covid-19, people's consumption behavior has changed, and the demand for online shopping, food delivery and takeout has surged, resulting in rapid growth of single-use products. In particular, plastic waste has a huge impact on the ecology and the ocean; the EPA is therefore urging "plastic source reduction".

A creative road running (walking) event was organized during the

press conference to promote "C" and "R". C stands for cycle and circular and R for redesign, reduce, reuse, restore, recover and recycle. The event was to encourage enterprises, organizations, and the public to take actions together to accelerate plastic source reduction and recycling. It was broadcast live online and netizens were allowed to interact online.

Representatives from environmental enterprises and organizations attended the event to echo "Waste Reduction, Carbon Reduction, and Green Living for All". They also set up booths to showcase the achievements of implementing plastic source reduction and recycling.

McDonald's restaurant replaced all

their tableware with FSC (Forest Stewardship Council)-certified sustainable paper containers and phased out plastic McFlurry cup lids. The measure can reduce nearly 32 metric tons of plastic waste per year. Momo Shop launched the second wave of "reusable bags" for online shopping on 19 April 2021 in conjunction with post offices. Users can drop the bags off in designated mailboxes or i-boxes to recycle them. The website BuyDirectlyFromFarmers also launched "reusable boxes". Foodpanda launched a trial environment-friendly delivery service in November last year. The service resumed on April 22 this year in Tainan City. ECOCO has set up smart recycling stations. Da Fon Environmental Technologies has obtained a number of



certifications in plastic recycling and material application, and is committed to the development of resource recycling. Mangodan

features 100% recycled plastic PC and PS reusable display cabinets. ChingPiao offers reusable cup rental services.

📍 A press conference on “Waste Reduction, Carbon Reduction, and Green Living for Everyone: Plastic Source Reduction and Recycling.”

## Environmental Monitoring

# New-Generation Air Quality Monitoring and Testing in Taiwan

**A**iming to enhance air quality monitoring capacity and better provide air pollution information in Areal-time, in 2013 the EPA launched the New-Generation Environmental Quality Monitoring and Testing Development Plan. Under the program, the air quality monitoring network has been upgraded into its fourth generation, resulting in much-improved air quality. Other than upgrades in hardware such as equipment in national-level monitoring stations, the EPA will keep strengthening the real-time broadcast and notification mechanism and working with the Central Weather Bureau (CWB) to enhance its air quality forecast operations and services.

Air quality in Taiwan has shown significant improvement based on the EPA's annual air quality monitoring report. Comparing data collected by monitoring stations in 2020 with that collected during the past decade, average annual concentrations of major air pollutants being monitored in 2020, such as particulate matters, fine particulate matters (PM<sub>2.5</sub>),

sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide, and ozone, are lower than concentrations in 2019.

Air quality monitoring is the key foundation for protecting air quality and controlling air pollution. The establishment of an air quality monitoring network went through three generations between 1980 and 2013. Significant steps taken

during that period include the National Air Quality Monitoring Network Establishment Plan in 1993 and the Environmental Quality Monitoring Network Phasing Plan in 2005.

The New-Generation Environmental Quality Monitoring and Testing Development Plan was launched in 2013 in response to



climate change and to meet the public demand for information on air quality. Through it, the EPA has hoped to further enhance national capacity in air quality monitoring, better provide air pollution information in real-time, and develop the fourth generation of the air quality monitoring network.

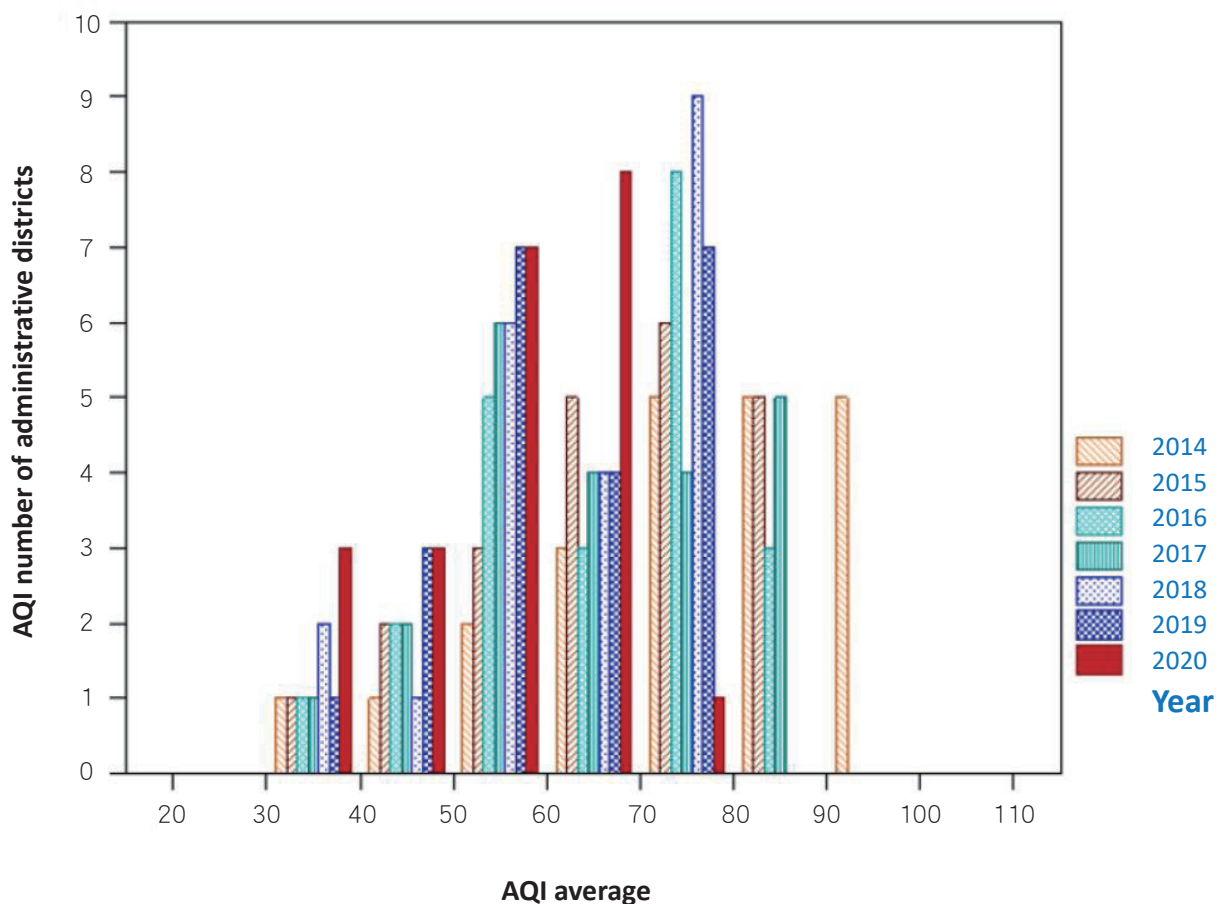
The new-generation air quality monitoring system strives to achieve four goals: integration of central and regional monitoring capacity; strengthening of pollutant concentration testing capacity; enhancing understanding and handling of regional pollution incidents, and; improving real-time environmental monitoring data broadcasting mechanisms. Significant measures include integrating all types of national

monitoring resources under the EPA's global information website (<http://airtw.epa.gov.tw/>), providing assistance, phasing out of obsolete or old instruments in national-level monitoring stations, establishing a multi-layered air quality monitoring Internet of Things (IoT), and adding standard manual measuring methods for PM<sub>2.5</sub> as well as a monitoring network for chemical compounds.

For the data collection systems of monitoring stations and the air quality monitoring center database, the EPA has also enhanced real-time broadcasting and notification mechanisms and works with the CWB to fine-tune operations and services related to air quality forecasts.

Monitoring instruments, such as the automated ones for PM<sub>2.5</sub>, that have been upgraded under the New-Generation Environmental Quality Monitoring and Testing Development Plan will no longer undergo calibration based on linear regression. This is because the instruments have already passed the USEPA's similarity standard methods, as well as meeting the similarity requirements listed in Taiwan's Regulations Concerning Comparisons Between Manual and Automated In-Air PM<sub>2.5</sub> Testing Methods (空氣中細懸浮微粒手動及自動檢測方法比對規範).

In response to making yearly air quality improvement, in the future, instruments in national-level monitoring stations will undergo upgrades on precision and limits



Number of administrative districts with average annual AQI readings, 2014-2020.

that will become more stringent so as to meet environmental monitoring needs concerning low-concentration pollutants. It is hoped this will provide the better information and high-quality monitoring data services needed to formulate control strategies.

### Focuses of recent air quality monitoring

Recent air quality monitoring has been focusing on the following two aspects:

#### 1. Strengthening monitoring capacity for low-concentration pollutants

To meet future needs to monitor air pollutants at lower concentrations, the EPA is paying special attention to the low-concentration monitoring capabilities of instruments as they are upgraded. Specification upgrades have included the removal of vapor disruption, which effectively led to the setting of record-low detection limits. For instance, instruments can now detect sulfur dioxide as low as 0.3 ppb as opposed to 0.5 ppb previously (a drop in the lower detection limit by 40%), 0.4 ppb of nitrogen oxides as opposed to 0.5 ppb previously (a 20% drop), and 0.5 ppb of ozone as opposed to 1 ppb previously (a 50% drop). These all demonstrate significant leaps in the monitoring capabilities of instruments.

#### 2. Integrating capacity of central and regional monitoring networks

The EPA has developed an integrated national air quality system, which collects and combines data from 218 monitoring stations in Taiwan. They include the EPA's own 78 stations, 34 stations

belonging to regional environmental bureaus, 36 stations belonging to specialized industrial parks, and 70 to large-scale enterprises. In addition, there have been continual efforts in assisting and expanding the collection of data from monitoring stations of other large-scale enterprises. The purpose is to improve comprehensive services to the public including real-time air quality information by facilitating integration of all monitoring stations across Taiwan.

#### 3. Handling of regional pollution incidents

In order to get the complete picture of the impacts on air quality from regional environmental atmospheric changes, the EPA has built a LIDAR (light detection and ranging) network. The network can monitor altitudes of diffusion layers in the atmosphere in areas prone to poor air dispersion. Another monitoring network has been set up with sensors for long distance visibility and particle size analyzers, so as to simultaneously monitor both visibility and particle sizes and analyze the correlation between visibility and air quality. Core monitoring stations comprising LIDAR, visibility sensors, particle size analyzers, and facilities that monitor PM<sub>2.5</sub> components have been set up in three regions to analyze pollution characteristics for future reference. These locations are: Banqiao, New Taipei City, in the northern region; Xitun, Taichung City, in the central region, and; Xiaogang, Kaohsiung, in the southern region.

### Replacing and upgrading instruments used in the monitoring network

Significant achievements in the

work of replacing and upgrading monitoring network equipment include:

#### (1) A better understanding of regional pollution characteristics

To enhance the quality of the national-level air quality monitoring network, the EPA has set up a background monitoring station in Fugui Cape, added six mobile monitoring stations, three mobile photochemical assessment stations, and one stationary station to assess photochemical reactions. Another significant advance was the establishment of the LIDAR monitoring network and set up of optical monitoring bases in the northern, central, and southern regions. Moreover, the EPA has been working on enhancing data collection and transmission management systems. By-the-hour data checking and equipment status analysis are now automated, effectively optimizing data collection and reading.

#### (2) New equipment for better environmental analysis

As air quality has improved year after year, there has been a growing need for low-concentration pollution monitoring. Thus, the EPA has replaced old equipment with new, including 90 new analyzers for sulfur dioxide, 90 for nitrogen oxides, 90 for ozone, 80 zero air generators, and 80 gas dilution calibrators. In total, the replacement and upgrades consisted of 1,286 instruments under 35 categories, 26 operation rooms under four types, and two vehicles for quality maintenance and audits. They can all be operated with higher stability and lower malfunction rates, with enhanced performance and 20-



The air quality monitoring network webpage.

focus is to lay the foundation for telecommunications for monitoring in the age of Industry 4.0.

## 2.Improving understanding of regional pollution characteristics

The EPA will be able to better understand regional pollution incidents and, in turn, improve in issuing forecasts and warnings by enhancing its capacity to monitor atmospheric characteristics.

## 3.Enhancing analysis capacity with new equipment

Multiple types of environmental quality monitoring and testing equipment have been introduced to better analyze pollution characteristics in the future.

50% improvement in their capacity for detecting low concentrations of pollutants.

### Future work and expected results

The following are focuses and expected results of future air quality monitoring:

## 1.Establishing the new-generation air quality monitoring network

With low-concentration pollution more and more common, the EPA will continue to upgrade equipment, enhance detection capacity and removal of interfering data, and lower detection limits. Another

## 4.Improving environmental monitoring information services

The EPA is able to provide better information services to over 20 million viewers every year after upgrading its information system's hardware and software.

### Recycling

## 2020 Waste Paper Tableware Amount Hits Record High of Nearly 90%

The EPA has been working to improve the effectiveness of paper tableware recycling through a series of policy measures and public information campaigns. In 2020, 159,897 metric tons of waste paper tableware was recycled, which was nearly double the amount recycled in 2019. The recycling rate increased significantly from 48.31% in 2017 to more than 89% in 2020, reaching a new annual high in the past three years.

### (1) Put green diet, recycling and sorting into practice

In 2020, the EPA implemented the Paper Tableware Recycling Friendly Store Program in conjunction with all local

environmental bureaus. The program assists and subsidizes buffet and lunch box store operators to set up dedicated waste paper tableware recycling facilities, place garbage bins and food scrap

bins alongside recyclable bins, install automated voice equipment to remind customers, and post awareness-raising posters. The measures guide operators on ways to improve dining environments



and increase the quality of collected paper tableware for better recycling. After receiving assistance, 2,900 buffet and lunch box stores (about 80% of the assisted) completed the installation of the equipment.

To make paper tableware recycling more practicable, on 4 January 2021, the EPA preannounced the draft of relevant regulations, specifying that buffet and lunch box stores shall install a dedicated recycling area for paper tableware. The regulations are expected to become effective on 1 July 2021. At present, assistance is provided so operators can respond early.

### **(2) Caring for base-level recyclers and enhancing the recycling system**

To care for self-employed recyclers, the EPA subsidized local governments to implement the Warm Care Recycling Program, registering self-employed recyclers that collect recyclables. From 1 Aug 2019, the maximum subsidy for each self-employed recycler was raised from NT\$2,000 to NT\$3,500 per month. As the recycling rate for paper tableware had been low, the unit price for collected paper tableware was

increased to NT\$18/kg, much higher than the price for general recyclables (lower than NT\$2/kg), so as to increase the incentives to boost the recycling rate. In July 2010, self-employed recyclers were matched with buffet and lunch box stores to collect paper lunch boxes. The measure was quite effective, which also helped meet the welfare needs and rights of self-employed recyclers.

### **(3) Providing guidance to expand processing capacity and raising processors' incentives**

The EPA successfully assisted Cheng Loong Corporation (Zhubei Mill) and Chung Hwa Pulp Corporation (Taitung Mill) to join as waste paper tableware processors in December 2018 and July 2019, respectively. The EPA will continue to provide guidance to add more processors in other counties and cities in order to expand the distribution of operators in the recycling system. Currently, there are three subsidized waste paper container processors in Taiwan. With a total designed processing capacity of 249,600 metric tons per year, they are capable of processing all waste paper tableware collected in the nation.

In addition, to encourage recycling and sorting, a subsidy rate increase (from NT\$7.25 to NT\$7.86 per kilogram) for the recycling and processing industry was phased in between 1 May to 31 October 2020. This also helped to raise the recycling volume for paper tableware.

### **(4) Organizing promotional activities to strengthen the concept of recycling**

The EPA organized a disposable tableware and beverage cup recycling promotion flash event and a press conference on paper tableware cleaning, sorting and stacking, and invited internet celebrities to shoot promotional videos to be broadcast on online media. In addition, promotional posters were made and sent to all local governments and pre-recorded interviews were broadcast through radio stations to urge people to put "cleaning, sorting and stacking" of paper tableware into practice, raising public awareness of paper tableware recycling. Moreover, the EPA also publishes an online resource recycling newsletter (R-paper), which has about 40,000 subscribers.

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