Action Plan for the United Nations Minamata Convention on Mercury

2019 Implementation Results

Environmental Protection Administration of the Executive Yuan

Ministry of Economic Affairs

Ministry of Health and Welfare

Council of Agriculture of the Executive Yuan

Occupational Safety and Health Administration of the Ministry of Labor

Customs Administration of the Ministry of Finance

Ocean Affairs Council

September 2020

Action Plan for the United Nations Minamata Convention on Mercury

2019 Implementation Results

Abstract

The United Nations Environment Programme (UNEP) formulated the Minamata Convention on Mercury to address global mercury pollution issues. The convention came into effect on August 16, 2017 (the same below).

Strengthening mercury management has become an international trend. Our country should review the current inter-ministerial mercury management and implementation status, plan for future control directions, and progressively integrate with the management of international conventions. Thus, the Environmental Protection Administration of the Executive Yuan (hereinafter referred to as the EPA) has invited the Council of Agriculture of the Executive Yuan (hereinafter referred to as the COA), Ministry of Health and Welfare (hereinafter referred to as the MOHW), Ministry of Economic Affairs, and Finance Ministry, Ministry of Labor and other ministries and agencies jointly formulated the “Action Plan for the United Nations Minamata Convention on Mercury”(approved by the Executive Yuan on June 27, 2016) as the basis for our country to implement mercury management, and revised it on a rolling basis in 2018 to respond to domestic management status. EPA has compiled the implementation results of various ministries and meetings in 2019 and hopes to use the results to let the world know our country's action on mercury management. The summary is as follows:

I. Achievements of New and Revised Regulations

(I) the Environmental Protection Administration of the Executive Yuan

A. On July 5, 2019, EPA publicized the revised mercury toxic substance management, and added in Table 2 “Prohibited Operation” in the “Controlled Toxic Chemical Substances and their Operation Management” that from January 1, 2021,

the use of mercury would be prohibited in the manufacture of batteries, switches and relays, fluorescent lamps, high-pressure mercury lamps and non-electronic measurement instruments, except for the exclusions by the Convention. In addition, in conjunction with the revision of Table 2, “may be used” in Table 3 was revised, and mercury-containing products used for the manufacture of calibration instruments or reference standards were added. (Toxic and Chemical Substances Bureau of the Environmental Protection Administration, hereinafter referred to as Toxic and Chemical Substances Bureau of EPA)

B. On July 12, 2018, experts and scholars in the related field were invited to the expert consultation meeting on environmental agent management. Following the prohibition of mercury and its compounds in insecticidal and bactericidal products by United Nations and the European Union, the preliminary resolution was to include “mercury and its compounds” as the prohibited ingredients in environmental agents. At present, the relevant information required for the legislation process is being studied, and it is expected to complete the publicization of the prohibition of mercury and its compounds in environmental agents before December 31, 2020. (Toxic and Chemical Substances Bureau of EPA)

C. In concert with the regulations in the Minamata Convention on Mercury, in 2019 the “Restriction of import of mercury-containing products” was drafted to prohibit the import of mercury-containing switches and relays, high-pressure mercury lamps for general lighting, and non-electronic measurement instruments (barometers, hygrometers, pressure gauges, thermometers and sphygmomanometers, etc.) to strengthen domestic mercury management. On September 23, 2019, the industrial symposium on drafted “Restriction of import of mercury-containing products” was held and later proceeded with the publicization of draft in accordance with the legislative process. The drafted

"Restriction of import of mercury-containing products" was publicized on February 3, 2020, stipulating that the import of the above products will be prohibited from January 1, 2021.(Department of Waste Management of the Environmental Protection Administration, hereinafter referred to as Department of Waste Management of EPA)

D. Continue to evaluate the management of waste electronics and appliances and waste IT products. In 2019, with reference to the classification principle of EU WEEE for electronic and IT products, domestic waste electronics, appliances and IT products currently under domestic control were integrated and classified, to facilitate the inclusion of mercury containing products into control and recycle in the future. (Department of Waste Management of EPA)

E. In 2018, with reference to the cement industry control laws and regulations of various countries, the drafted air pollutant emission standards for the cement industry has been formulated, and the mercury emission standard values will be updated. In 2019, the investigation of domestic status was completed as well as the collection of standard data from foreign countries and on-site investigation and interview for all companies in the industry, and based on feasible control technology and emission status data, the draft was revised and discussed with the industry. (the Department of Air Quality Protection and Noise Control of the Environmental Protection Administration, hereinafter referred to as Department of Air Quality Protection and Noise Control of EPA)

F. On January 10, 2017, the Environmental Protection Agency revised and announced the drinking water quality standards and tightened the "mercury" control standard: from July 1, 2020, 0.002 mg/L will be tightened to 0.001 mg/L. (the Department of Environmental Sanitation and Toxic Substance Management of the Environmental Protection Administration, hereinafter referred to as Department of Environmental Sanitation and Toxic Substance Management

of EPA)

G. In 2019, there were 2 publicized test methods, including “Method for detecting metals and trace elements in water-inductively coupled plasma atomic emission spectrometry” (NIEA W311.54C) and “Method for detecting metals and trace elements in water-inductively coupled plasma mass spectrometry” (NIEA W313.54B), which both are suitable to test mercury content in water. (the Bureau of Environmental Inspection of the Environmental Protection Administration, hereinafter referred to as Bureau of Environmental Inspection of EPA)

(II) Ministry of Economic Affairs

A. On August 15, 2019, the new standard CNS691 “Fluorescent tubes (for general lighting)” (2019 version) was publicized. The maximum mercury content limit for fluorescent tubes must not exceed 4 mg, which is in accordance with the Convention. To effectively manage the mercury content of fluorescent tubes, a publicization was on June 1, 2020 to revise the “relevant test requirements for hot cathode fluorescent tubes”, and from January 1, 2021, it will be implemented that the mercury content of straight fluorescent tubes must not be greater than 4 mg. (the Bureau of Standards, Metrology and Inspection of the Ministry of Economic Affairs, hereinafter referred to as Bureau of Standards, Metrology and Inspection of MOEA)

B. Plan to revise the product test standards for “Monitor for Automatic Data Processing System, and Head Mounted Display, Monitor, Head Mounted Display, TV for Automatic Data Processing System”, the new version of standard CNS 15598-1 will include the requirement of mercury content limit for cold cathode fluorescent tubes for electronic display and electrodeless fluorescent tubes, and the standard is planned to be publicized at the end of 2020 in the process to publicize the revision of test standards. (Bureau of Standards, Metrology and Inspection of MOEA)

(III)Ministry of Health and Welfare

In concert with the content of the revised “Controlled Toxic Chemical Substances and their Operation Management” publicized by the Environmental Protection Department of the Executive Yuan on July 5, 2019, the Food and Drug Administration issued a letter on November 7, 2019 to inform manufacturers of mercury-containing blood pressure monitor and relevant industrial associations of medical devices and health bureaus of local governments that the Administration t will not approve the inspection, registration, extension and modification of the domestic for mercury-containing blood pressure monitors and medical device license from January 1, 2021. Regarding mercury-containing blood pressure monitor products manufactured before January 1, 2021, unless EPA has other restrictive regulations on sales and import, they may continue to sell. In addition, those who hold a valid license for domestically produced mercury-containing blood pressure monitors and medical devices will violate the relevant EPA laws and regulations if they continue to manufacture mercury-containing blood pressure monitor products after January 1, 2021. (the Food and Drug Administration of the Ministry of Health and Welfare, hereinafter referred to as FDA of MOHW)

II. Monitoring and sampling results of environment, biological elements, and commercial products

(I) Environmental Protection Administration of the Executive Yuan

A. The local environmental protection bureaus issued 344 confirmation documents for the mercury and cadmium content of designated batteries in 2019, of which 232 were non-button-type designated batteries and 112 were button-type designated batteries. A total of 16,391 companies were audited, a total of 95,684 designated battery audits, and a total of 2,816 designated battery audits, with no violations. (Department of Waste Management of EPA)

B. Local environmental protection bureaus conducted mercury thermometer audits and in 2019 put 1,385 companies under control, 3,423 audits, with no violations. The Environmental Protection Bureau of Taichung City recovered 3,090 g of mercury thermometer, and other cities did not have recovery. (Department of Waste Management of EPA)

C. Continue to conduct testing of mercury emission from stationary pollution sources and establish database of emission inventory, to control mercury emission. In 2018, the mercury emission was 1.606 tons, and the main emission sources were cement kilns and power generation. (the Department of Air Quality Protection and Noise Control of the Environmental Protection Administration, hereinafter referred to as Department of Air Quality Protection and Noise Control of EPA)

D. In 2019, the testing results for emission from 24 domestic incinerators showed the maximum mercury concentration was 0.0276 mg/Nm^3, far lower than the mercury concentration 0.05 mg/Nm^3 specified in the emission standards of air pollutants from stationary pollution sources. (the Environmental Police Unit of the Environmental Protection Administration, hereinafter referred to as Environmental Police Unit of EPA)

E. In 2019, the testing results of fly ash stabilized compounds from 24 domestic incinerators showed that the maximum mercury concentration was 0.126 mg/L, lower than the mercury concentration 0.2 mg/L specified in Article 27 of the General Waste Recycling and Disposal Methods. (Environmental Police Unit of EPA)

F. With focus on cases of industrial wastes, in 2019, mercury and five samples of its compounds were tested by Toxicity Characteristic Leaching Procedure (TCLP), and the testing results were all compliant with the leaching standards of the Toxicity Characteristic Leaching Procedure in the Hazardous Industrial Waste Identification Criteria. In

addition, the testing results for 24 samples of discharged water were all compliant with the discharged water standards. (Environmental Police Unit of EPA)

G. In 2019, the investigation and analysis of total mercury water quality was completed for seven coal-fired power plants and one petrochemical company in 29 times. For industrial discharged water (17 times), only 1 time of testing found the concentration 0.0027 mg/L and all others were below the method detection limit (0.0002 mg/L). (the Department of Water Quality Protection of the Environmental Protection Administration, hereinafter referred to as Department of Water Quality Protection of EPA)

H. In 2019, the total mercury concentration in the regular testing and reporting from power plants was ND-0.0012 mg/L; lower than the control limit (0.005 mg/L). (Department of Water Quality Protection of EPA)

I. In 2019, the amount of recycled waste dry batteries containing mercury in our country was about 2,969 tons, and the amount of waste lighting equipment was about 4,081 tons. (the Recycling Fund Management Board of the Environmental Protection Administration, hereinafter referred to as Recycling Fund Management Board of EPA)

J. In 2019, the gaseous mercury concentration range in environmental air was 0.69-5.81 ng/m^3, while particulate mercury concentration was very low, and its concentration range was 9.66-103 pg/m^3. (Department of Air Quality Protection and Noise Control of EPA)

K. In 2019, the mercury content in 85 domestic rivers (303 testing points) was investigated and the results were compliant with domestic related environmental quality standards. (the Department of Environmental Monitoring and Information Management of the Environmental Protection Administration, hereinafter referred to as the Department of Environmental Monitoring and Information

Management of EPA)

L. In 2019, the mercury content in 105 marine testing points was investigated, and the results were all compliant with domestic environmental quality standards. (the Ocean Conservation Administration of the Ocean Affairs Council, hereinafter referred to as Ocean Conservation Administration of OAC)

M. Random sampling and testing of drinking water quality for “mercury” in a total of 641 samples was conducted, including tap water quality testing of 608 samples and easy tap water quality testing of 33 samples, the results were all compliant with drinking water quality standard (0.002mg/L), and the pass rate was 100%. (Department of Environmental Sanitation and Toxic Substance Management of EPA)

N. In 2019, the number of newly publicized mercury polluted site on the control list was zero, and the number of sites removed from the control list was 2. As of December 31, 2019, the total number of mercury polluted site was 31 (27 sites under control, and 4 sites under remedy), and 16 sites were removed from the control list. (the Soil and Groundwater Remediation Fund Management Board of the Environmental Protection Administration, hereinafter referred to as Soil and Groundwater Remediation Fund Management Board of EPA)

O. In 2019, 100 samples of sediments from 14 rivers and 20 discharge outlets to the sea of pollution potential were tested, and the testing result of mercury was ND~0.547 mg/kg. Among them, eight samples exceeded sediments quality index lower limit (0.23 mg/kg). (Soil and Groundwater Remediation Fund Management Board of EPA)

P. For the monitoring of the atmospheric mercury in Lulin Mountain, the monitoring data from January to December, 2019 showed that the average concentration of gaseous element mercury (1.49 ng/m^3) > the average concentration

of particulate mercury (32.5 pg/m^3) > the average concentration of gaseous oxidized mercury (20.6 pg) /m^3), it can be seen that gaseous element mercury was the most in atmospheric mercury substances, accounting for 96.56% of the total atmospheric mercury concentration, which was close to the lower limit of the atmospheric mercury background value range (1.5-1.7 ng/m^3) on the northern hemisphere surface. (Department of Environmental Monitoring and Information Management of EPA)

Q. EPA has cooperated with US EPA, US NADP and the National Central University to jointly implement the Asia-Pacific Mercury Monitoring Network (APMMN) since 2012 and assist partner countries in the Asia-Pacific region to establish mercury monitoring, sampling and analysis technologies. (Department of Environmental Monitoring and Information Management of EPA)

(II) Ministry of Economic Affairs

In 2019, 71 samples of products from market focusing on wood brick toys, clay toys, baby walkers, luggage and game mats were tested, and the mercury (heavy metal) in all 71 samples was compliant with the specification in national standard. (Bureau of Standards, Metrology, and Inspection of MOEA)

(III) Ministry of Health and Welfare

A. In 2019, 45 cosmetic products with samples from local health bureaus and the Customs Administration of the Ministry of Finance were tested for mercury content, and no results exceeded the legal residue limit 1ppm. (FDA of MOHW)

B. In 2019, FDA monitored heavy metal contents in food products, and randomly tested 102 samples of rice, 153 samples of aquatic products and 32 samples of algae food products, and except that 2 samples of aquatic products were detected for “methyl mercury” to exceed “Health standards

for contaminants and toxins in foods" and were subject to regulatory action, the rest of testing results were compliant with the regulation. (FDA of MOHW)

C. In 2019, 30 random samples of Ligustrum, Cohosh and Mutong were tested and a total of 352 samples of Chinese herbal medicine were tested, and only 1 sample of Scrophulariacea failed, and the rest were compliant with the specified limit (0.2 ppm); 250 random samples of Traditional Chinese Medicine Preparation containing Ginseng, Poria and Atractylodes Macrocephala Powder were tested, and all the results showed mercury content compliant with the specified limit (0.5 ppm). (Department of Chinese Medicine and Pharmacy of MOHW)

(IV) The Council of Agriculture of the Executive Yuan

A. A total of 2,310 samples of aquatic products before market were tested for mercury, including cultured aquatic products, offshore and remotely fished aquatic products, and western cultured oysters. The testing results were all complied with the food hygiene standards. (Fisheries Agency of COA)

B. With focus on farmland of high pollution potential, 550 samples of ground, crops (rice and vegetables) were tested, and the value was ND~0.023 mg/kg (the detection limit was 0.05 mg/kg), and heavy metal content was compliant with the Food Safety and Hygiene Management Regulations. (Agriculture and Food Agency of COA)

C. 51 random samples of mineral fortified feeds were tested, and all the testing results were compliant with "Fortified Feeds Heavy Metal Content Standards" (mercury below 0.5 ppm). (Department of Animal Industry of COA)

(V)The Occupational Safety and Health Administration of the Ministry of Labor

In accordance with the relevant regulations on occupational safety and health, employers should take appropriate engineering control measures according to the

nature of hazardous gases, vapors and dusts emitted in the workplace to ensure that they do not exceed the allowable exposure standards in workplaces. In 2019, there were 157 companies to perform operating environment monitoring. (the Occupational Safety and Health Administration of the Ministry of Labor, hereinafter referred to as Occupational Safety and Health Administration of MOL)

III. Public Education and Communication Advocacy

(I) The Environmental Protection Administration of the Executive Yuan

In August 2019, experts from the United States, Japan, the European Union, and ASEAN were invited to handle the implementation of the United Nations Minamata Convention on Mercury Management and Construction of Environmental Capital Conference and an inter-ministerial roundtable meeting to discuss the recovery and rebirth of Minamata City, Japan from the Minamata disease pollution incident, and how to build an environmental model city, as well as exchanging opinions on the challenges and opportunities of implementing the United Nations Minamata Convention on Mercury management, elimination of mercury-containing products and waste management, and government-business cooperation experience, to strengthen the Mercury management in our country and bring new thinking to the participants. (Toxic and Chemical Substances Bureau of EPA)

Cement kilns and circular economy are an important part of waste end treatment. Mercury emission may partly come from treating waste component. It has been suggested that the industry reduce the use of coal ash to reduce mercury emission. (Department of Air Quality Protection and Noise Control of EPA)

(II) Ministry of Economic Affairs

In conjunction with Taiwan Optoelectronic Semiconductor Industry Association (TOSIA), Photoelectronic Industry and

Technology Development Association (PIDA), International WELL Building Institute, IWBI) and other industry associations, MOEA invited experts from industry and academia to the “Smart Healthy Light Environment of Green Building Innovation Technology and Business Opportunity Application Conference” and “AI Innovation Application of Smart Shopping Mall Light Service Conference”, to share international trends and standards, promote the awareness of healthy lighting, smart energy-saving lighting system integration solutions, LED light service applications, and industrial status, and stimulate industrial interactive communication, and activate industrial technology, applications, and new market ideas. (Industrial Development Bureau of MOEA)

(III) Ministry of Health and Welfare

In the “Eat Healthy (folic acid, iodine, iron)” of the “Maternity Health Guidelines” issued to every pregnant woman, the Health Promotion Administration reminds women preparing to become pregnant that they should adjust their bodies to a healthy state, and for infants, pregnant or breastfeeding women may be more sensitive to the harm of some heavy metals (such as methylmercury). Therefore, it is recommended to reduce the intake of large fishes with a high concentration of heavy metals. However, it is still fine to consume a variety of other small fishes in an appropriate amount to take the fish nutrients in reduced risks. In addition, the electronic copy of the booklet is also available in the “Health 99 website” for public download and reference. (the Health Promotion Administration of the Ministry of Health and Welfare, hereinafter referred to as Health Promotion Administration of MOHA)

(IV) The Occupational Safety and Health Administration of the Ministry of Labor

A. Reference examples of GHS labeling and safety data sheets have been prepared for mercury, to provide manufacturers and the public with understanding of its hazardous

characteristics and related preventive measures.

B. The above references are available on the website of the GHS Chemicals Global Harmonization System of the Ministry, which can be downloaded and used by manufacturers and the public.