

Outline of Results of the Environmental Survey and Monitoring of Chemicals in FY2021

(1) History

In FY1974, on the basis of the agreement at the establishment of the Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances (No. 117, enacted in 1973) (hereafter, Chemical Substances Control Law), the Environmental Survey and Monitoring of Chemicals was begun for the purpose of understanding the presence of existing chemical substances in the general environment. Since FY1979, the framework of the Comprehensive Survey of Chemicals on Environmental Safety based on the Priority List (list of chemicals to be preferentially surveyed) has been established, and the Environmental Survey and Monitoring of Chemicals have been incorporated as a part of the Comprehensive Survey of Chemicals on Environmental Safety. In addition, as associated surveys, the Wildlife Monitoring, the Follow-up Survey of the Status of Pollution by Unintentionally Formed Chemicals, the Surface Water/Sediment Monitoring, the Examination Survey of the Designated Chemical Substances, and other surveys have been established and improved.

On the other hand, the Priority List-based survey was fundamentally reviewed in order to enable an immediate and appropriate response to the changes in the situation of problems concerning chemicals in the environment and current policy issues, including the enforcement of the Law Concerning Reporting, etc. of Releases of Specific Chemical Substances to the Environment and Promoting Improvement in Their Management (No. 86, enacted in 1999) (hereafter, the PRTR Law) and the adoption of the Stockholm Convention on Persistent Organic Pollutants (hereafter, Stockholm Convention).

As a result of the review, the Priority List-based method was changed to the method in which target chemicals are selected mainly from those proposed chemicals by each department such that the survey results can be effectively utilised to develop the policies concerning chemicals in the environment since FY2002. In addition, the Environmental Survey and Monitoring of Chemicals consisting of several surveys with different aims, namely, the Initial Environmental Survey, the Environmental Survey for Exposure Study, and Environmental Monitoring, was adopted as a new framework.

The Environmental Survey and Monitoring of Chemicals has been implemented within a system that comprises the Initial Environmental Survey, the Detailed Environmental Survey, and Environmental Monitoring since FY2006. At the same time, Project for Preserving Environmental Specimens and Analytical Method Development Project have also been actively tackled to support the above survey.

Nor is this all. Various measures and regulatory guidelines pertaining to chemical substances have also been reviewed to more effectively utilize resources. As of FY2010, survey points have

been re-distributed or newly designated to reflect data and information on emissions and releases, while monitoring surveys now incorporate adjustments to detection frequencies of data compilation.

(2) Survey Procedure

a) Selection of target chemicals

Among chemicals that were requested for survey by each department, target chemicals were finally selected by 26th Special Committee for the Assessment of Chemicals, Division of Environmental Health, Central Environment Council, conducted in December, 2020.

b) Contents of the survey

The Initial Environmental Survey

For chemical substances considered to present environmental risks, data garnered areas susceptible to high concentrations in the general environment, supports evaluations of the appropriateness of chemical substance survey targets as Designated Chemical Substances as per the PRTR Law or as chemical substance survey targets that are otherwise derived. This provides the basic references to assess risk potential and determine survey parameters. Such survey data were precisely examined and analysed at the Expert Working Group for Reviewing the Results of the Environmental Survey and Monitoring of Chemicals and the Expert Working Group for Analysing the Results of the Initial Environmental Survey and Detailed Environmental Survey. Moreover, analytical methods were also developed as necessary.

In FY2021, 11 chemicals (groups) were selected as target chemicals. Some target substances or points including selected for survey in light of documentation or submittals regarding emissions.

The Detailed Environmental Survey

Nationwide surveys are implemented to provide the references and parameters needed to properly evaluate risks posed by and levels of exposure to, chemical substances as annotated on the Priority List under the Chemical Substance Control Law. Similarly to the Initial Environmental Survey, the survey data were examined and analysed at the Expert Working Group for Reviewing the Results of the Environmental Survey and Monitoring of Chemicals and the Expert Working Group for Analysing the Results of the Initial Environmental Survey and Detailed Environmental Survey. Moreover, analytical methods were also developed as necessary.

In FY2021, 6 chemicals (groups) were selected as target chemicals. Some target substances or points including selected for survey in light of documentation or submittals regarding emissions.

The Environmental Monitoring

Environmental Monitoring is annually implemented to effectively track the residual or persistence levels in the general environment of the Class I Specified Chemical Substances set out in the Chemical Substances Control Law, and/or for the purpose of tracking year to year changes in levels of Persistent Organic Pollutants (POPs) as defined in the text of the Stockholm Convention. Two groups, the Expert Working Group for Review of Results of Environmental Surveys and Monitoring of Chemicals, and the Expert Working Group for Analyzing the Results of Environmental Monitoring along with the Expert Group on POPs Monitoring reviewed and evaluated the data.

In FY2021, 11 chemicals (groups) were selected as targets, the 11 chemicals (groups) listed under the Stockholm Convention.

c) Survey results

The Initial Environmental Survey

In surface water, 6 out of the 10 target chemicals (groups) were detected (Ivermectins, Cyclohexylamine, *N*-(2,3-Dimethylphenyl)anthranilic acid (synonym: Mefenamic acid), Streptomycin, 2-Hydroxy-4-methoxybenzophenone (synonym: Benzophenone-3) and 2-Ethylhexyl-*p*-methoxycinnamate).

In sediment, the target chemical was not detected.

In air, 1 out of the 2 target chemicals was detected (Furan).

The Detailed Environmental Survey

In surface water, 3 out of 5 target chemicals (groups) were detected (Cyclopolydimethyl siloxanes, Tetraalkylammonium salts and Tetramethylammonium hydroxide).

In sediment, the target chemical was detected (2-Benzylideneoctanal).

In wildlife, the target chemicals group was detected (Cyclopolydimethylsiloxanes).

In air, the target chemical was not detected.

The Environmental Monitoring

When examining the change in the FY2002~2021 data for surface water and sediment, the concentration levels of POPs in surface water and sediment remain unchanged or gradually decrease as a whole. By focusing on the distribution of chemicals in surface water and sediment by area, it was found that the chemicals frequently tended to be relatively high in concentration in areas that are subjected to human activities, such as harbors and semi-closed coastal areas near large cities, as expected.

When examining the change in the FY2002~2021 data for wildlife, the concentration levels of POPs in wildlife remain unchanged or gradually decrease as a whole. Similarly to last fiscal

year's data, it was observed that the concentrations of Total PCBs, etc. tended to be relatively high in fish living along coasts near populated areas.

When examining the change in the FY2002~2021 data for air, the concentration levels of POPs in air remain unchanged or gradually decrease as a whole.

e) Conditions of detection in survey

From FY 1974 to 2021 the number of chemicals that were subjected to the Environmental Survey and Monitoring of Chemicals was 1,511, among which, 930 chemicals were detected in the general environment.

Stocktaking of the detection in the Environmental Survey and Monitoring of Chemicals (FY1974~2021)

	Surface water	Sediment	Wildlife	Air	Food	Others	Total number of chemicals surveyed
Number of chemicals surveyed	1,385	1,073	487	502	27	26	1,511
Number of chemicals detected	625	519	302	353	21	13	930
Percentage of detected chemicals	45%	48%	62%	70%	78%	50%	62%

(Note 1) Since FY1985, the detection limit for surface water, sediment, and fish has been uniformly treated.

(Note 2) The total “1,511” is the total number of chemicals surveyed from FY1974 to FY2021, and the total number of chemicals detected (“930”) is the number of chemicals detected in any medium as a result of the survey.

(Note 3) “Others” under medium are precipitation and indoor air.

Schematic of Environmental Survey and Monitoring of Chemicals in FY 2021

