

# CHAPTER 3

## THE SYSTEM OF INVESTIGATION OF CHEMICAL SUBSTANCES IN THE ENVIRONMENT

Most of the survey results and monitoring data referred to this document are taken from the "Environmental Survey and Wildlife Monitoring of Chemicals" by Ministry of the Environment (MOE) of Japan. MOE introduced a "System of Investigation of Chemical Substances in the Environment" in F.Y.1974. This system comprises the following:

- i) General Inspection Survey of Chemical Substances on Environmental Safety;
  - ii) Monitoring of Water and Bottom Sediment;
  - iii) Wildlife Monitoring;
  - iv) Investigation and Survey of Designated Chemical Substances;
- and
- v) Follow-up Survey of the Situation of Pollution by Unintentionally Formed Chemical Substances.

This System was established in response to a 1973 Resolution to the Chemical Substances Control Law that requested an investigation of environmental safety on existing chemicals. (Note: Approximately more than 20,000 substances which were manufactured or imported for commercial purposes at the time of enactment of the Law, were listed in the Existing Chemical Substances Inventory.)

MOE investigated the concentration of chemicals in the environment as a part of its Safety Inspection Program of the Existing Chemical Substances from F.Y.1974. Then, in F.Y.1979, MOE initiated a "General Inspection Survey of Chemical Substances on Environmental Safety" and "Wildlife Monitoring", which are called together the "Comprehensive Survey of Chemical Substances on Environmental Safety", to identify and monitor chemicals remaining in the environment.

Since 1986, the monitoring of water and bottom sediment was added to the "Comprehensive Survey of

Chemical Substances on Environmental Safety".

MOE had conducted the 1st Comprehensive Survey from F.Y.1979 to F.Y.1988, to inspect the safety of chemical substances in the environment, which was followed by the Second Comprehensive Survey from F.Y.1989.

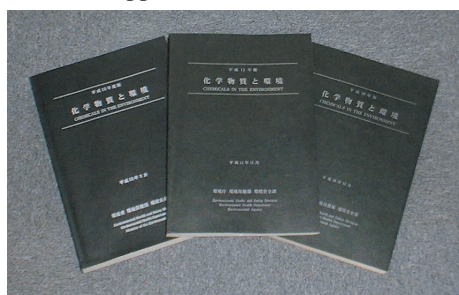
Since F.Y.1985, unintentionally formed chemical substances were also added to the Survey.

Table 3-1 shows the summary of the "System of Investigation of Chemical Substances in the Environment".

Table 3-1 Summary of the System of Investigation of Chemical Substances in the Environment

	Air	Water	Bottom sediment	Wildlife	In door air and diet
General Inspection Survey of Chemical Substances on Environmental Safety	○	○	○	○ (fish only)	
Monitoring of Water and Bottom Sediment		○	○		
Wildlife Monitoring				○	
Investigation and Survey of Designated Chemical Substances	○	○	○		○
Follow-up Survey of the Situation of Pollution by Unintentionally Formed Chemical Substances	○ (PCBs only)	○	○	○ (fish, shell)	

These survey results are published in the annual report of "Chemicals in the Environment". The annual report of F.Y.1998 appears in the CD-ROM.



### 3-1 Comprehensive Survey of Chemical Substances on Environmental Safety

The first phase of Comprehensive Survey of Chemical Substances on Environmental Safety was carried out from F.Y.1979 to F.Y.1988. Valuable data concerning chemical

substances in the environment had been accumulated. It also assisted to promote progress on analytical methods etc..

The Chemical Substances Investigation and Survey Committee established by MOE reviewed the Surveys. By taking into account its progress and emerging situation concerning chemicals. The second phase of Comprehensive Survey of Chemical Substances was started in F.Y.1989.

The system of second phase was different from first phase in the following points;

- a) The second phase included new chemical substances and unintentionally formed chemical substances in addition to the existing chemical substances.
- b) The improvement of the method for environmental monitoring was made in second phase.
- c) In the second phase, the exposure was assessed based on the results of environmental survey, and effect assessment was

conducted based on scientific information.

Fig. 3-1, 2, 3 and 4 shows the sampling sites of the "System of Investigation of Chemical Substances in the Environment", in all parts of Japan, for water, air, water and bottom sediment and wildlife, respectively.

There are 794 substances examined through the environmental survey since F.Y.1974 to 2000, and 333 substances were detected in the general environment. The results of detection in environmental surveys from F.Y. 1974 to F.Y. 2000 are shown in Table 3.1-1. The more detailed data are obtained in the CD-ROM.

Table 3.1-1 Results of detection in environmental surveys (F.Y. 1974~2000)

	water	bottom sediment	fish	air	total
Surveyed substances	761	737	247	235	794
Detected substances	146	232	100	151	333
Detection ratio (%)	19.2	31.5	40.5	64.3	41.9

## 3-2 Investigation and Survey of Designated Chemical Substances

Designated Chemical Substances, which are based on the Chemical Substances Control Law, could be designated as Class 2 Specified Chemical Substances if the substances are judged to be harmful from the result of the toxicity test instructed according to the situation of environmental pollution by the chemicals. Class 2 Specified Chemical Substances require prior notification of the scheduled production or importation volume. If necessary, their production or importation volume is regulated.

For this purpose, MOE started the Investigation and Survey of the Designated Chemical Substances in the Environment from 1988 F.Y., in order to grasp the situation

of these substances in the environment. Furthermore, from 1990 F.Y., the Study of the Exposure Route (survey concerning the quantity of chemical substances exposed to humans in daily life via each media) was newly initiated. Consequently, the name of the survey was changed to the Investigation and Survey of Designated Chemical Substances.

In "the Future of the Second General Inspection Survey (Final report)", this survey was to 'provide sufficient consideration for Designated Chemical Substances and Class 2 Specified Chemical Substances as substances subject to the survey'. Thus this survey has been conducted separately as part of the Second General Inspection Survey.

## 3-3 The Follow-up Survey on the Pollution by Unintentionally Formed Chemical Substances

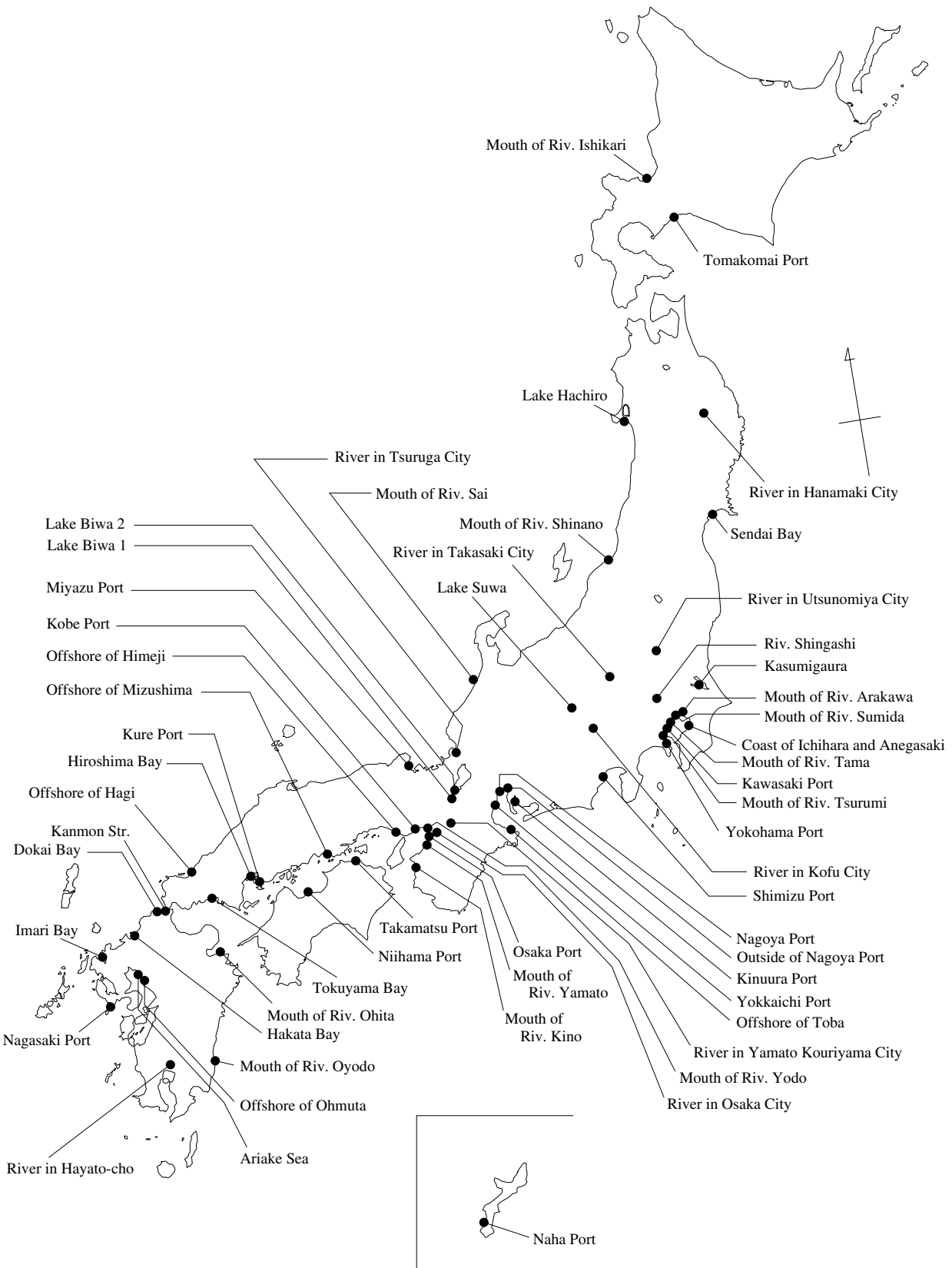
Environmental pollution caused by harmful substances formed unintentionally in the process of manufacture or waste incineration such as dioxins, or in the natural process of reaction in the environment, have become a social problem. Appropriate surveys became necessary for these substances which were not directly subject to the Chemical Substances Control Law, to take measures.

Therefore, the existence in the environment of unintentionally formed substances, which may affect human health and the environment, has been investigated since F.Y.1985.

A survey, named "the Follow-up Survey on the Pollution by Harmful Chemical Substances", was started to take preventive measures for environmental pollution by such chemical substances.

The monitoring for PCDDs and PCDFs was conducted in this survey from F.Y.1989 to F.Y.1997. However, it was converted to the different survey along with the enforcement of the "Law Concerning Special Measures against Dioxins". In this survey, the monitoring on PBDDs, PBDFs and PCBs was conducted.

Fig. 3-1 Sampling sites of the General Inspection Survey of Chemical Substances on Environmental Safety (Water)



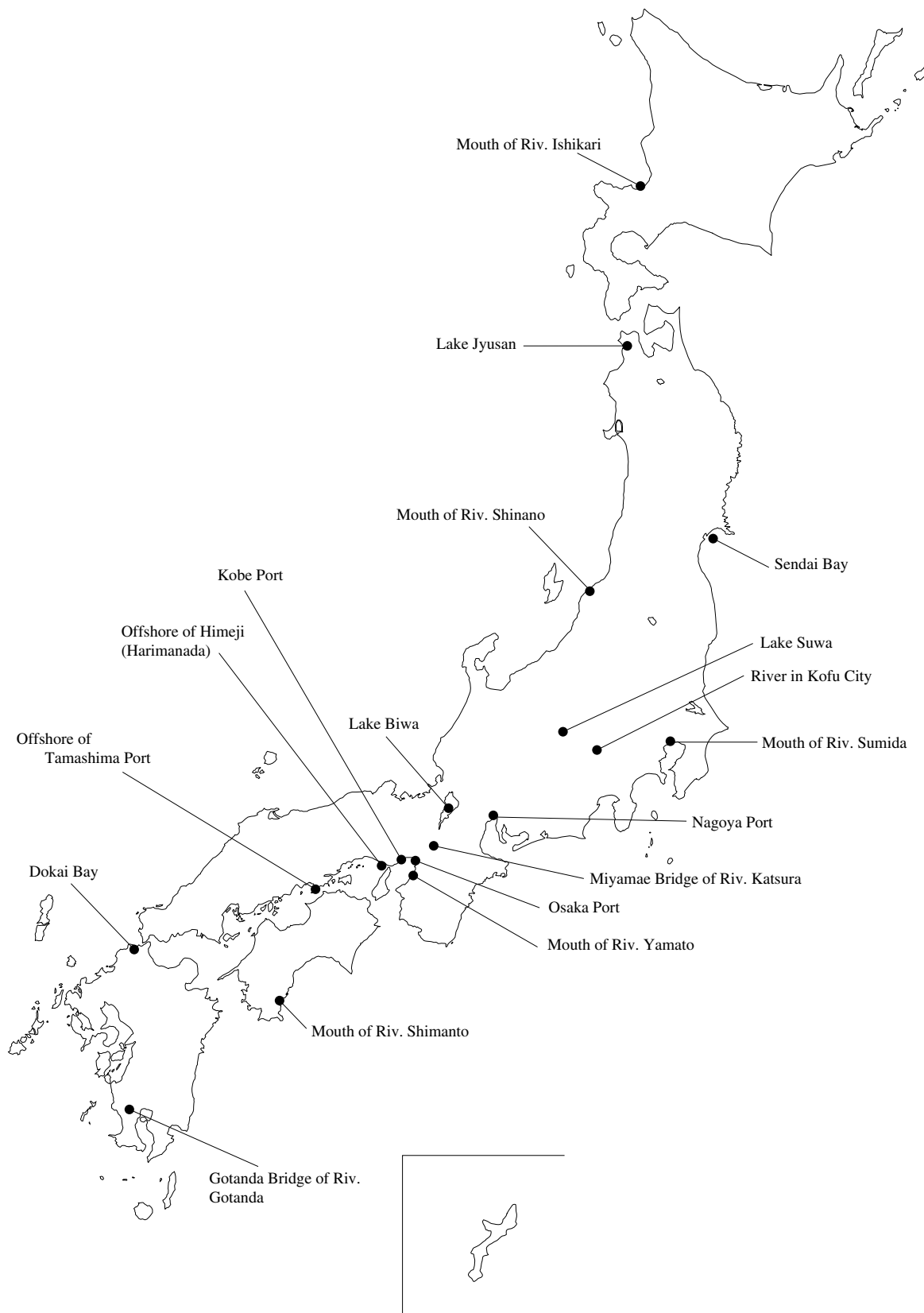
Note:  
 The survey in F.Y. 2000 was conducted on 14 substances from 56 sampling sites.  
 The number of substances depends on the site.

Fig. 3-2 Locations of the General Inspection Survey of Chemical Substances on Environmental Safety (Air)



Note:  
 The survey in F.Y. 2000 was conducted on 14 substances from 22 sampling locations.  
 The number of substances depends on the location.

Fig. 3-3 Sampling sites of the Monitoring for Water and Bottom Sediment



Note:  
 A total of 17 sampling sites (7 rivers, 7 seas, 3 lakes) was chosen in a F.Y.2000 survey (on only sediment) .

Fig. 3-4 Sampling sites of the Wildlife Monitoring



Note:

The survey has 20 sampling sites (i.e. 17 from sea areas, 1 from fresh water, and 2 from land), and a total 12 species of wildlife (i.e. 8 fish (e.g. sea bass), 2 shellfish (e.g. common mussel) and 2 birds) were selected in a F.Y.2000 survey.