

## 11.3 Air Pollution Control Law

### 11.3.1 Overview

The Air Pollution Control Law was established in 1968, based on the Smoke and Soot Regulation Law, which was passed by the 40th session on the Diet in May 1962, and it has been amended several times since its enactment.

The Air Pollution Control Law was enacted to promote the public health and preserve the living environment with respect to air pollution through regulating the emission of smoke and soot (sulfur oxides, soot and dust, and other toxic substances) arising from industrial plants or business establishments as a result of industrial activities, and establishing the maximum permissible limits of motor vehicle exhausts.

Subsequently, against the background of the progress of air pollution brought about by the increased consumption of petroleum-based fuels, photochemical smog, air contamination caused by toxic substances such as hydrogen fluoride, cadmium and lead, and the problem of fumigation by automobile exhaust gas, efforts were made to tighten control. These efforts included the introduction of the system of absolute liability of enterprises and regulation of total emission on sulfur oxides and nitrogen oxides, and a series of emission standards revises and addition of controlled substances.

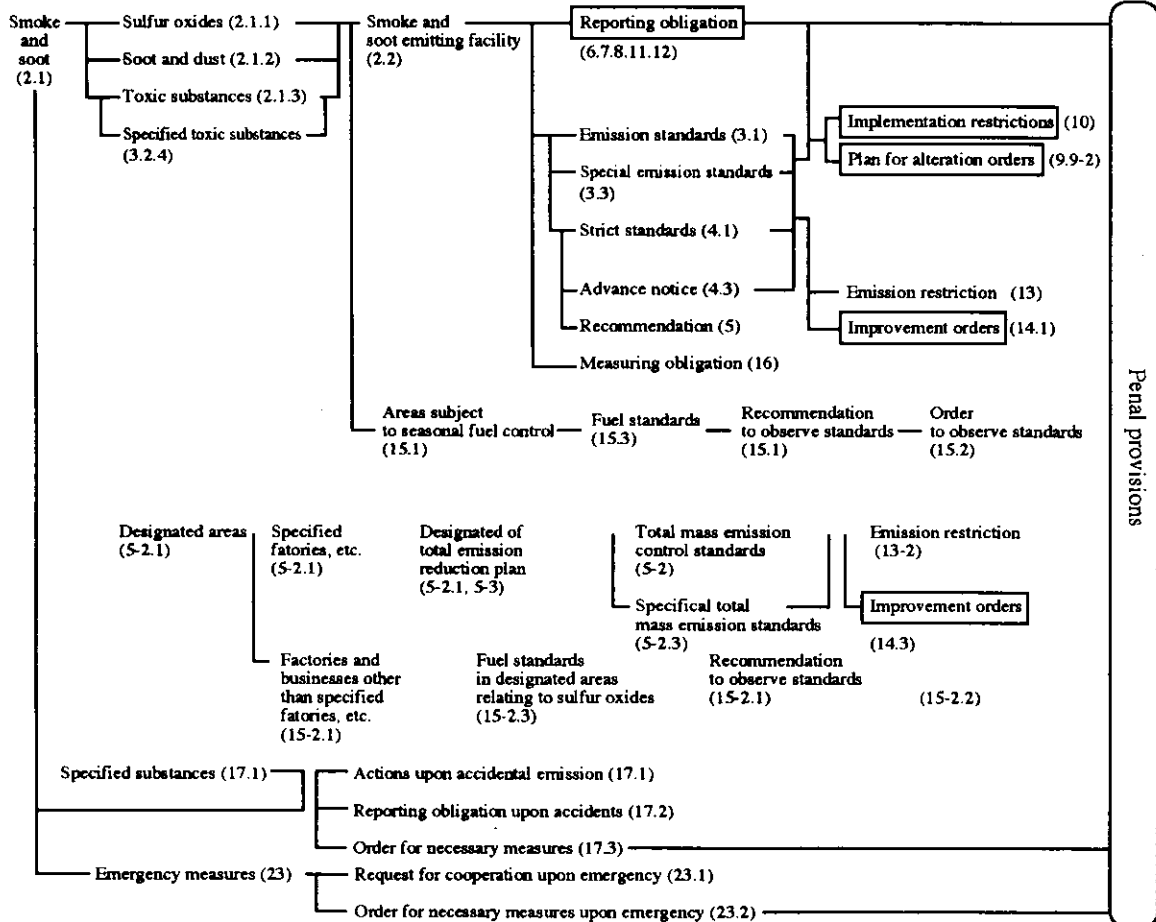
The Law was further revised in 1996 to include provisions that require implementation of measures necessary for the prevention of undesirable effects on people's health, with respect to benzene and other harmful air pollutants that are feared to adversely affect human health by long-term exposure to low concentrations. The structure of the Air Pollution Control Law is given in Table 11.3.1.

**Purpose**

To promote public health and preserve the living environment with respect to air pollution through:  
 1) Regulating the emission of soot, smoke and dust arising from industrial plants/businesses as a result of industrial activity or the demolition of buildings.  
 2) Promoting implementation of measures to control harmful air pollutants.  
 3) Establishing the maximum limits on vehicle exhaust gas  
 4) Protecting victims by making provisions for the liability of enterprises to compensate for damages where such enterprises cause air pollution which damages human health.

**Smoke and Soot Control**

**<Chapter II> #See Chapter 4 for emergency measures.**



**Dust**

**Dust <Chapter II-2>**

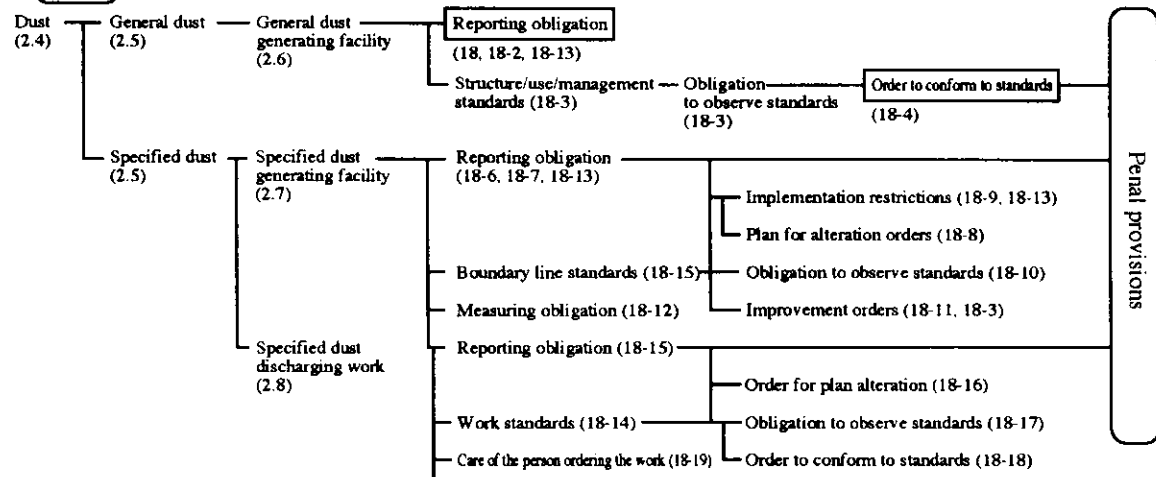


Fig.11.3.1 (1) Structure of the Air Pollution Control Law Purpose

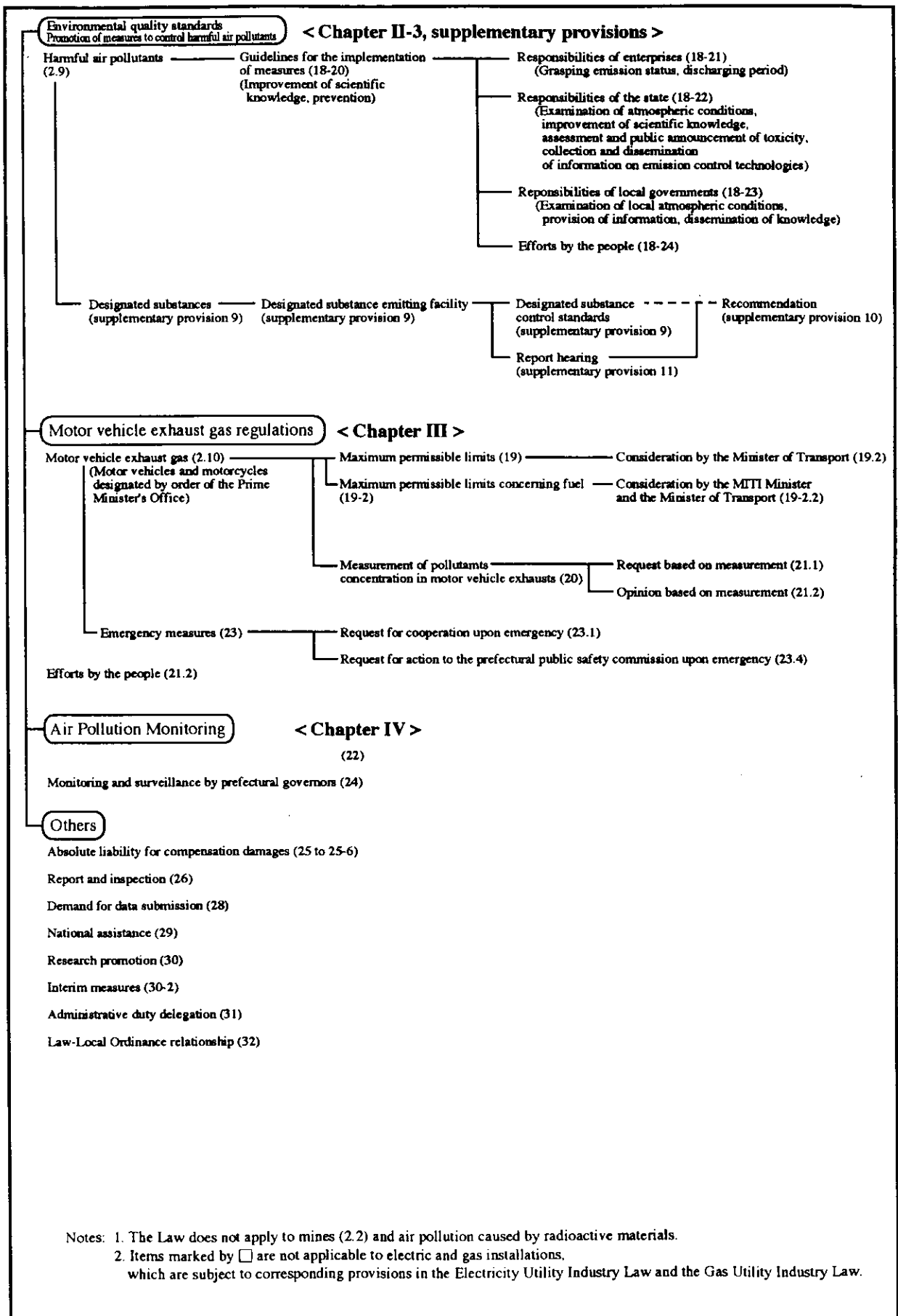


Fig.11.3.1 (2) Structure of the Air Pollution Control Law Purpose

### 11.3.2 Smoke and Soot

#### (1) Smoke and Soot and Smoke and Soot Emitting Facilities

In the Air Pollution Control Law, "smoke and soot" means (i) sulfur oxides, (ii) soot and dust, and (iii) toxic substances designated by Cabinet Order (cadmium and its compounds; chlorine and hydrogen chloride; fluorine and its compounds; lead and its compounds; and nitrogen oxides), that are generated as a result of combustion of fuel and other materials. "Smoke and soot emitting facilities" mean any facility that meets the following three conditions: (i) that it is installed in an industrial plant or a business establishment (excluding mines); (ii) that it generates and emits smoke and soot; and (iii) that the smoke and soot so emitted cause air pollution. More specifically, boilers, heating furnaces, roasting furnaces, blast furnaces, drying furnaces, waste incinerator, gas turbines, diesel engines, gasoline engines and so on that are over a certain size are designated as such facilities by Cabinet Order (Table 11.3.1).

Table 11.3.1 (1) Smoke and Soot Emitting Facilities Targeted by the Air Pollution Control Law

	Facility	Size
1	Boiler	<ul style="list-style-type: none"> <li>· Heating area of 10 square meters and over</li> <li>· Combustion ability of 50 liters/hour and over</li> </ul>
2	Gas generating furnace, heating furnace	<ul style="list-style-type: none"> <li>· Raw material treatment ability of 20 tons/day</li> <li>· Combustion ability of 50 liters/hour and over</li> </ul>
3	Roasting furnace, sintering furnace (machine)	<ul style="list-style-type: none"> <li>· Raw material treatment ability of 1 ton/day and Over</li> </ul>
4	(Metal refining use) Blast furnace, converter, open-hearth furnace	
5	(Metal refining and casting use) Smelting furnace	<ul style="list-style-type: none"> <li>· Fire grid area of 1 square meter and over</li> <li>· Tuyere area of 0.5 square meters and over</li> <li>· Combustion ability of 50 liters/hour and over</li> <li>· Transformer nominal capacity of 200 kva and Over</li> </ul>
6	(Metal forging, rolling and heat treatment use) Heating furnace	
7	(Petroleum product, petrochemical product, and coal tar product manufacturing use) Heating furnace	
8	(Petroleum refining use) Fluid contact disintegration device- catalytic converter	<ul style="list-style-type: none"> <li>· Ability to heat the carbon adhering to the catalyst of 200 kg/hour and over</li> </ul>
8-2	Sulfur collecting facility attached to the oil gas cleansing device	<ul style="list-style-type: none"> <li>· Combustion ability of 6 liters /hour and over</li> </ul>
9	(Ceramics manufacturing use) Kiln, smelting furnace	<ul style="list-style-type: none"> <li>· Fire grid area of 1 square meter and over</li> <li>· Combustion ability of 50 liters/hour and over</li> <li>· Transformer nominal capacity of 200 kva and over</li> </ul>
10	(Inorganic chemical industry product and foodstuff industry use) Reaction furnace (including carbon black manufacturing fuel burning device), direct heating furnace	
11	Drying furnace	
12	(Iron, steel, alloyed iron, carbide manufacturing use) Electric furnace	<ul style="list-style-type: none"> <li>· Transformer nominal capacity of 1,000 kva and over</li> </ul>
13	Waste incinerator	<ul style="list-style-type: none"> <li>· Fire grid area of 2 square meters and over</li> <li>· Incineration ability of 200 kg/hour and over</li> </ul>

Table 11.3.1 (2) Smoke and Soot Emitting Facilities Targeted by the Air Pollution Control Law

	Facility	Size
14	(Copper, lead, zinc refining use) Roasting furnace, sintering furnace (including pellet sintering furnace), blast furnace, converter, drying furnace	<ul style="list-style-type: none"> <li>· Raw material treatment ability of 0.5 tons/hour and over</li> <li>· Fire grid area of 0.5 square meters and over</li> <li>· Tuyere area of 0.2 square meters and over</li> <li>· Combustion ability of 20 liters /hour and over</li> </ul>
15	(Cadmium-based pigments and cadmium carbonate manufacturing use) Drying facilities	<ul style="list-style-type: none"> <li>· Capacity of 0.1 cubic meters and over</li> </ul>
16	(Chlorinated ethylene manufacturing use) Chlorine quick cooling facility	<ul style="list-style-type: none"> <li>· Chlorine treatment ability of 50 kg/hour and over</li> </ul>
17	(Ferric chloride manufacturing use) Smelting furnace	
18	(Activated charcoal [limited to the method which uses zinc chloride] manufacturing use) Reaction furnace	<ul style="list-style-type: none"> <li>· Combustion ability of 3 liters /hour and over</li> </ul>
19	(Chemical product manufacturing use) Chlorine reaction facilities, hydrogen chloride reaction facilities, hydrogen chloride absorbing facilities	<ul style="list-style-type: none"> <li>· Chlorine treatment ability of 50 kg/hour and over</li> </ul>
20	(Aluminum refining use) electrolytic furnace	<ul style="list-style-type: none"> <li>· Electric current capacity of 30 ka and over</li> </ul>
21	(Phosphorus, phosphoric acid, phosphoric acid fertilizer, compound fertilizer [products which use phosphorus as a raw material] manufacturing use) Reaction furnace, enrichment facilities, Kiln, smelting furnace	<ul style="list-style-type: none"> <li>· Mineral phosphate treatment ability of 80 kg/hour and over</li> <li>· Combustion ability of 50 liters/hour and over</li> <li>· Transformer nominal capacity of 200 kva and over</li> </ul>
22	(Hydrofluoric acid manufacturing use) Enrichment facilities, absorption facilities, distillation facilities	<ul style="list-style-type: none"> <li>· Heating area of 10 square meters and over</li> <li>· Pumping power of 1kw and over</li> </ul>
23	Sodium tripoli phosphate manufacturing use [products which use phosphorus as a raw material]) Reaction furnace, drying furnace, Kiln	<ul style="list-style-type: none"> <li>· Raw material treatment ability of 80 kg/hour and over</li> <li>· Fire grid area of 1 square meter and over</li> <li>· Combustion ability of 50 liters/hour and over</li> </ul>
24	(Secondary lead refining [lead alloy manufacturing], lead piping, sheeting and line manufacturing use) Smelting furnace	<ul style="list-style-type: none"> <li>· Combustion ability of 10 liters hour and over</li> <li>· Transformer nominal capacity of 40 kva and over</li> </ul>
25	(Lead storage battery manufacturing use) Smelting furnace	<ul style="list-style-type: none"> <li>· Combustion ability of 4 liters /hour and over</li> <li>· Transformer nominal capacity of 20 kva and over</li> </ul>
26	(Lead-based pigments manufacturing use) Smelting furnace, reverberatory furnace, reaction furnace, drying facilities	<ul style="list-style-type: none"> <li>· Capacity of 0.1 cubic meters and over</li> <li>· Combustion ability of 4 liters /hour and over</li> <li>· Transformer nominal capacity of 20 kva and over</li> </ul>
27	(Nitric acid manufacturing use) Absorption facilities, bleaching facilities, enrichment facilities	<ul style="list-style-type: none"> <li>· Nitric acid synthesis, bleaching, enrichment abilities of 100 kg/hour and over</li> </ul>

Table 11.3.1 (3) Smoke and Soot Emitting Facilities Targeted by the Air Pollution Control Law

	Facility	Size
28	Cokes oven	· Raw material treatment ability of 20 tons/ hour and over
29	Gas turbine	· Combustion ability of 50 liters/hour and over
30	Diesel engine	
31	Gas engine	· Combustion ability of 35 liters /hour and over
32	Gasoline engine	

Note: · When the facilities are of a number of different sizes, each one can be categorized appropriately as a smoke and soot generating facility.

· “Combustion ability” refers to the combustion capacity per hour when calculating fuel on the basis of heavy oil.

(2) Smoke and Soot Emission Control

Means and methods of control applicable to smoke and soot can be roughly divided into the following four categories:

1) General emission standards

Emission standards established by the State as the national minimum according to the type of smoke and soot emitting facility.

2) Special emission standards

These special emission standards, which are stricter than general one, are applicable to new smoke and soot emitting facilities established in areas where location of smoke and soot emitting facilities, which emit smoke and soot containing sulfur oxides, soot and dust or specific toxic substances, are concentrated (an area with a heavy concentration of facilities).

3) Strict emission standards

These are stringent emission standards which are established by prefectures according to their respective ordinances, to take the place of general emission standards, when it is recognized that existing general or special emission standards are inadequate to protect public health or conserve the living environment in an area under their jurisdiction. Prefectures are authorized to issue strict standards for the emission of toxic substances other than soot and dust and sulfur oxides. Twenty-one prefectures have these standards at present.

4) Regulation of total emission standard

These standards are applicable to specified factories emitting designated smoke and soot in designated areas where it is recognized to be difficult to attain the prescribed environmental quality standards solely with the emission standards referred to from clauses 1 to 3 above.

Unlike emission standards, the regulation of total emission standards are not standards which are applied to each unit of a facility, but they are concerned with the total mass emission of designated smoke and soot generated at all the smoke and soot emitting facilities at specified factories. The governor of the prefecture prescribes this standard

based on relevant total mass emissions reduction plan. Sulfur oxides and nitrogen oxides are designated smoke and soot substances at present, and regulation of total emission standards are prescribed for these substances.

Twenty-four areas (accounting for about 33 percent of the total population and about 56 percent of the national fuel consumption) are designated by the regulation of total emission standards for sulfur oxides, and these have been subject to full control since May 1978. Standards for nitrogen oxides have been designated for three areas (Tokyo, Osaka, and Kanagawa Prefectures) and have been in effect since 1982.

In an area where emission standards alone do not provide adequate control over sulfur oxides, the governor of the prefecture may prescribe a fuel standard for the sulfur contents of fuels used in such an area and may recommend or order enterprises and other persons in the area to observe the said fuel standard. Fuel standards may be divided into those applicable for a prescribed period to cope with air pollution caused by things like the heating of buildings in city centers and those applicable to any person who establishes a factory or business, other than a specified factory, within an area designated for sulfur oxides.

Regarding actions at the time of an accident, the person who installed a smoke and soot emitting facility or specified facility (a facility which generates any of the 28 specified substances, including ammonia and benzene, which are designated by Cabinet Order as substances liable to adversely affect human health or the living environment, and is not a smoke and soot emitting facility) is required to take emergency measures promptly to restore normal conditions upon mechanical failure or any other accident that causes discharge of a large quantity of smoke and soot or specified substances, and notify the governor of the prefecture of the occurrence.

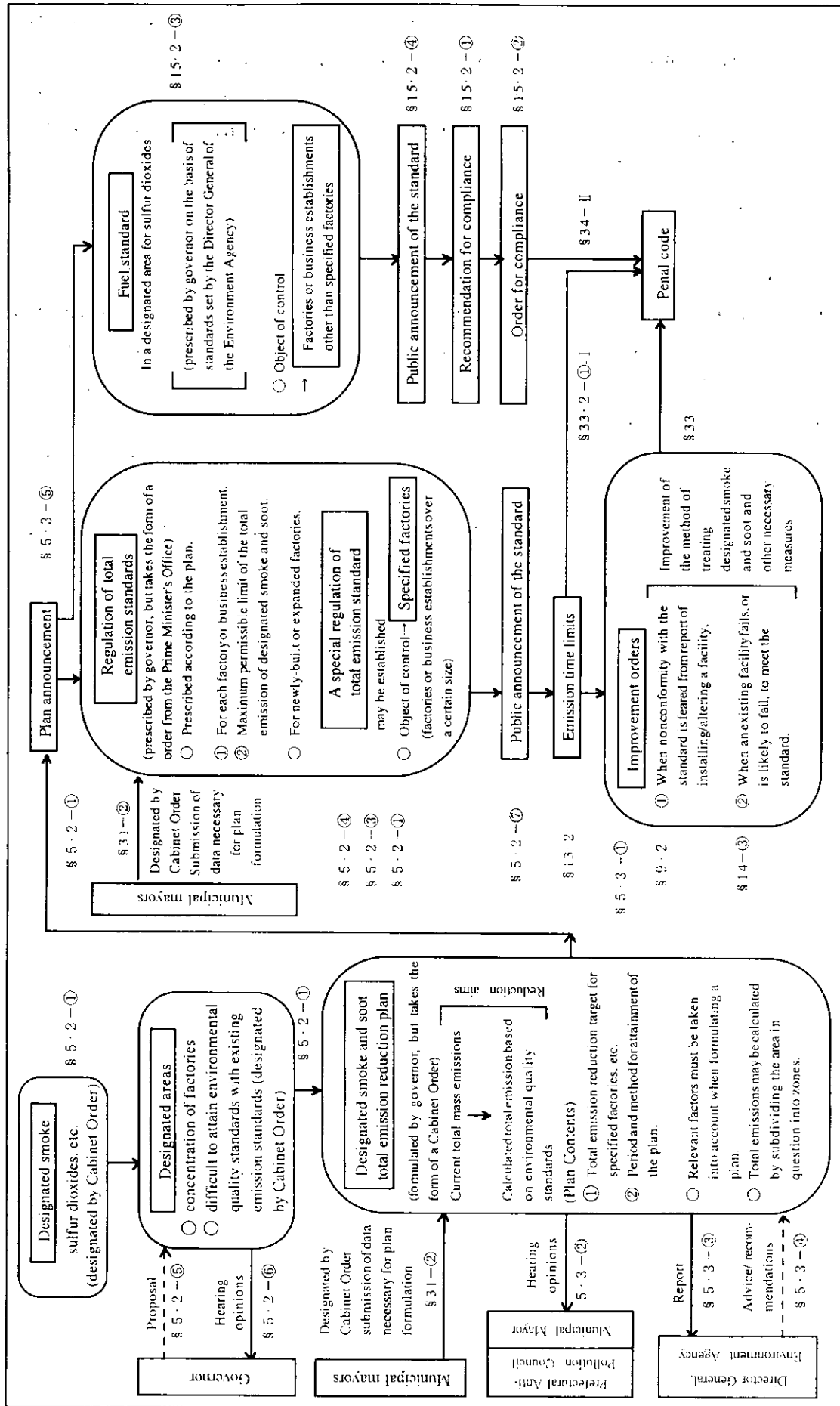


Fig. 11.3.2 Regulation of Total Emission Structure Outline



### 11.3.3 Particulate dust

In the Air Pollution Control Law, the term “particulate dust” means any substance discharged or scattered as a result of crushing, sorting or any other mechanical treatment of materials, or the piling up of materials. Regulations on general particulate dust are prescribed in the form of standards for the structure, use and management of general particulate dust emitting facilities. Asbestos is designated as specified particulate dust liable to adversely affect human health, and the maximum permissible level of its concentration in the ambient air along the boundary line of the premises of a factory or business establishment is prescribed. Other control measures are also in place such as work standards designed to prevent the scattering of asbestos from building demolition sites.

### 11.3.4 Motor Vehicle Exhausts

With the rapid progress of motorization from the late 1950s, motor vehicles have become an important means of transportation for economic activity as well as in people’s daily lives. On the other hand, they have also caused serious air and noise pollution, vibration and other environmental pollution and have raised major social problems. In response to this, regulations on motor vehicle exhausts were introduced from the late 1960s, and these have been strengthened gradually.

To control motor vehicle exhaust gas in Japan, the Director General of the Environment Agency establishes the maximum permissible amounts of substances causing air pollution discharged by motor vehicles based on the results of air pollution monitoring and future prospects for technologies to reduce motor vehicle exhausts. The Minister of Transport in turn establishes necessary measures to control motor vehicle exhausts, in the form of safety standards, under the Road Transport and Motor Vehicle Law, to ensure that the said maximum permissible limits are maintained. Controls on new-model and existing-model vehicles are secured by vehicle inspection. The maximum permissible limits were formerly established for standard-, small-, and mini-sized motor vehicles with respect to carbon monoxide, hydro-carbons, nitrogen oxides, particulates (for diesel-powered vehicles only) and diesel smoke. Motorcycles will be subject to control starting from 1998.

### 11.3.5 Controls on Harmful Air Pollutants

The amendment of the Air Pollution Control Law in May 1996 called for the implementation of measures necessary for the prevention of undesirable effects on human health with respect to harmful air pollutants that are feared to adversely affect human health by long-term exposure to low concentrations.

Of the harmful air pollutants, benzene, trichloroethylene and tetrachloroethylene have been specified as designated substances whose emission or scattering must be prevented immediately. Facilities that discharge or scatter these substances are designated as designated substance discharging facilities and are subject to substance control standards established for each facility. (Fig.11.3.3)

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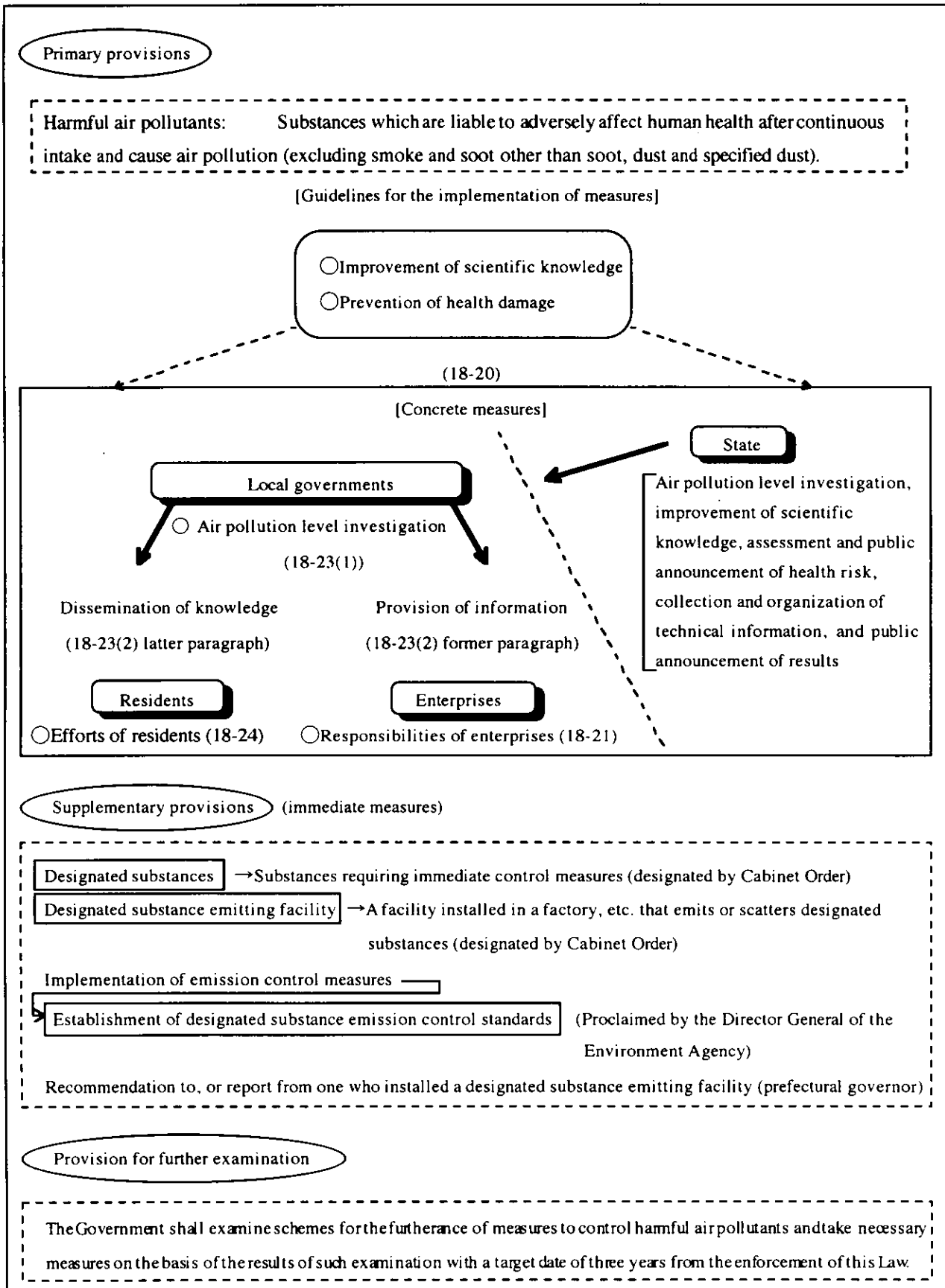


Fig.11.3.3 Outlines of measures to control harmful air pollutants under the revised Air Pollution Control Law