

## Chapter 11

### The Formulation and Enforcement of the Environmental Policy by the Local Government

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The Tokai area Aichi prefecture (its prefecture capital is Nagoya city) had been developed as one of the foremost industrial area in Japan since before World War II. Along with the rebirth of the traditional industries such as fabric and ceramic, auto and machinery showed the rapid growth after the World War II. The Tokai area, with increasing the shipment value, won back the center position of industrial area in Japan.

The Tokai area succeeded to maintain a relatively mild climate along with the rapid economic growth. China is enjoying the rapid economic growth with the development of manufacturing, however, they are suffering from the serious environmental problems, too. The economic growth patterns of the costal line of China and the Tokai area have the commonly observed feature of the concentration of the manufacturing. Therefore the procedure toward the enforcement of the environmental policy in Aichi will be a positive guide to the China's environmental measures.

#### 1. Economy and Environment in Aichi

Aichi prefecture is located roughly in the middle of Japan close to Pacific coast. Aichi accounts for 1.4% of the national landmass and has a population of about 7 million. In Aichi, there are about 31,000 industrial businesses with over 4 million employees.

##### 1.1 Outline of Economy in Aichi

Aichi is the one of foremost industrial concentration area achieving a No. 1 industrial output in Japan. Aichi comes to own 6% of the market for prefectural gross product. Among the share of manufacturing related shipments value reached to 11.4%, and Aichi captured No.1 in Japan for the 22<sup>nd</sup> consecutive year. Aichi's industrial structure reveals

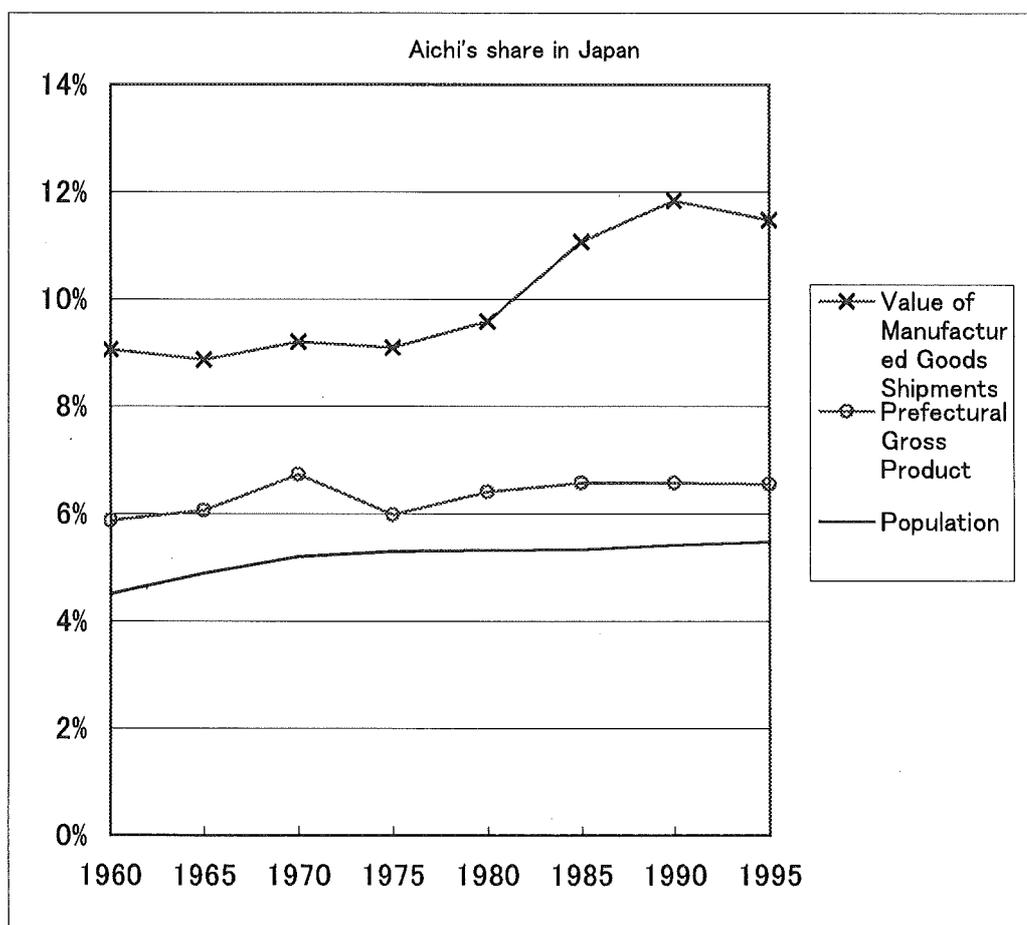
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that transportation equipment occupies the largest category, making up 43.2% of the total product shipment, followed by general machinery, 9.7%, electrical equipment, 7.2%, iron and steel, 5.5% and finally food which accounts for 4.6% of the total as of 1994.

<Table -1> Development of Aichi's population, prefectural gross product, and shipment value of manufacturing

	Population (million)	Prefectural gross product (billion)	Value of manufactured goods shipments (billion)
1960	4.2	714.3	1,412.9
1965	4.79	1,871.3	2,321.1
1970	5.38	4,764.8	6,362.3
1975	5.92	8,975.4	11,582.5
1980	6.22	14,683.7	20,598.3
1985	6.45	20,155.9	27,967.2
1990	6.69	28,335.5	33,603.9
1995	6.86	32,049.8	33,952.1



Data: Aichi Statistical Yearbook

## 1.2 Environmental Index

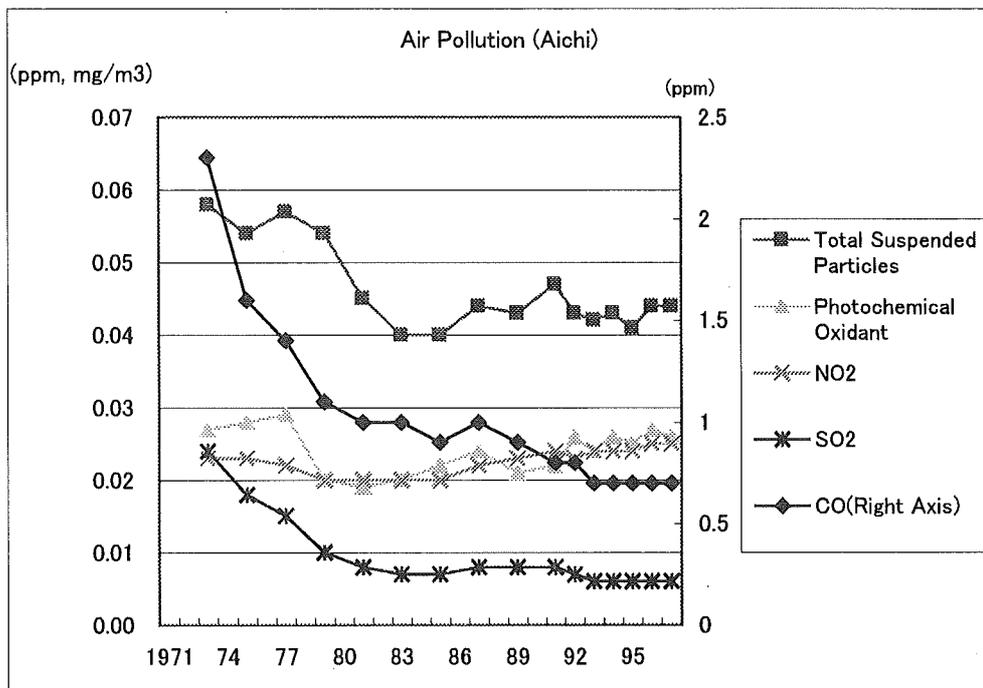
Aichi's annual economic growth rate showed about 15% during 1966~1970. Economic development caused environmental problems such as air and water pollution around 1970.

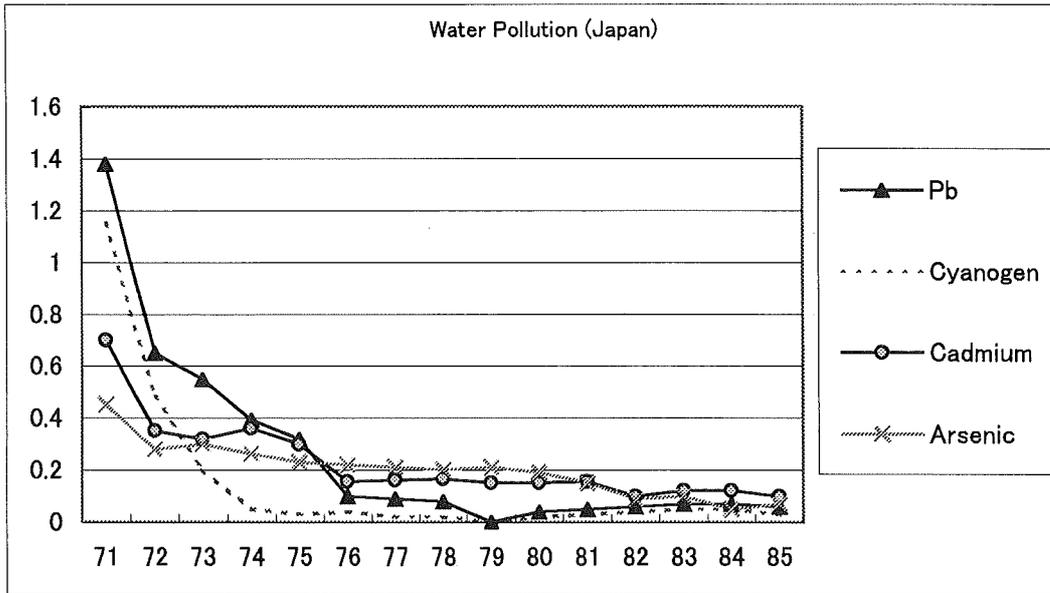
As for causes of those, in general, 4 factors can be listed.

- High economic growth
- Development centering on heavy and chemical industries
- Rapid urbanization
- Lack of social infrastructure such as sewage system

SO<sub>2</sub> and CO concentrations have decreased year by year because of the various regulations. SO<sub>2</sub> has improved due to the strict regulations against air pollution sources like boilers. CO has decreased by the regulations mainly against automobile exhaust gas, which have been strengthened in steps since 1973.

On the other hand, NO<sub>2</sub> remains unchanged.





From: Environmental Department of Aichi

## Water Pollution

Items related to human health such as cadmium have drastically improved. However, as for items related to the living condition such as BOD or COD remain unchanged.

## 2. Formulation and enforcement of the Environmental policy

The following are the outline of legislative and administrative organization to promote the environmental policy in Aichi.

### 2.1 Enactment of Municipals Ordinance

Here in Aichi, the prefecture ordinance for pollution control was enacted in 1964. Since the pollution problem was acknowledged only at local level, Aichi's regulation was limited to the air, water, noise and vibration pollutions based on their own legislative power.

"Aichi prefecture pollution control ordinance" was enacted in 1971. Along with the adjustment and expansion of the pollution related laws at the national Pollution diet in 1970, the regulation based on the amended law was supplemented. In 1974, the Aichi prefecture pollution control ordinance was amended dramatically. To cope with the diversification and amplification of pollution problems in Aichi, such as immutable

water related control and license systems against drawing groundwater were added to the ordinance. The originality and self-initiative for environmental administration in Aichi were increased by the supplement of the laws as well as the implementation of the various regulations.

“Aichi basic ordinance for environment” was enacted in 1995. It was based on the national Basic Environment Law of 1993, which concerns over not only the waste disposal and urban or regional life environmental issues but also the global environment issues such as the global warming. This ordinance sets the basic concepts of 1. enjoying the many blessings and abundant environment, and its inheritance to the future generations, 2. building a society ensures the sustainable development based on the reduction of the load on environment, and 3. promoting the environmental protection based on the business and citizens activities

With this basic concept, Aichi is working on 1. formulation of a basic environmental plan including long-term objectives and directions for environmental preservation, 2. encouragement of the environmental impact assessment carried by industrial sector 3. installation of the subsidy policy to reduce the burden bearing on industry and citizens who are working on environmental preservation, 4. promotion of the environmental education and learning, 5. promotion of the environment preservation activities such as beautification campaign and collecting of the recyclable resources, 6. establishment of the promotion committee of environmental preservation to accelerate the local environmental preservation activity, 7. acceleration of the international cooperation.

## 2.2 Environmental Administrative Organization

Development of the Environmental administrative organization was conducted by establishing the pollution prevention group at project department in 1961, pollution prevention section under the direct jurisdiction of governor in 1964, and then pollution management department in 1969. In 1971, to promote cooperation among local municipalities and take care of the pollution related job, pollution management division, air and noise quality division, water quality division, and Environment management division as well as environment preservation section at health center were organized under the Environment department system.

<Table -2> Organizational Structure of Environment Department

Environment policy division	53
Air quality division	33
Water quality division(Ground Environment Room)	36
Nature conservation division	22
Waste management division	34
Environment research center	65
Health center (17 offices and 6 branches) , others	121
Total number of staff	364

### 3. The Measures to Control Pollutions

The economic development caused the pollution problems as well as the enhancement of our standard of living. To cope with these problems, Aichi has been implementing the various kinds of measures.

#### 3.1 Pollution Control Ordinance

It is very important to control the pollution to secure the healthy and cultural life for the people in Aichi. To supplement the insufficient pollution related laws, "Aichi prefecture pollution control ordinance" was enacted in 1971. By introducing air quality related emission control, water quality related effluent control and groundwater pumping control in 1974 at the beginning, the revision of the pollution control was conducted to deal with the regionalized and diversified pollution. According to "Aichi prefecture pollution control ordinance", prefecture independent control is implemented as well as strictness of effluent and emission standards and supplementation of control items.

As for the water pollution control, our government divided Aichi into 7 areas according to the features within each area's industrial structure. In an area where textile industry is active, stricter emission standards are imposed on the textile industry. In an area where food industrial activity is high, stricter emission standards are imposed on the food industry.

<Table -3> Example of Ordinance : Textile Industry

	Aichi's ordinance	National standard
Area A	BOD 50mg/l	BOD 160mg/l

### 3.2 On-the-spot inspection and administrative guidance

Based on the laws of air, water, waste control and "Aichi prefecture pollution control ordinance", Health Center officials have been conducted on the spot inspection and checked the condition of plant processes, pollution prevention facilities and environmental documents recorded by a company excepting the ordinance-designated cities of Nagoya, Toyohashi, and Toyota since 1998. The inspection reached 15,679 occasions in total for air pollution and 11,028 occasions in total for water pollution since then.

The level and kind of pollution vary from industry to industry and company to company. So it is difficult to show uniform and concrete pollution prevention methods in the form of laws or textbooks. Our Health Center officials are well trained, so that they are able to give appropriate guidance in line with the state of pollution of each company.

### 3.3 Monitoring system

There are 104 air quality-monitoring stations in Aichi. These stations are scattered covering 60% areas of 88 municipalities, except for municipalities in mountainous areas.

These stations house automatic instruments measuring SO<sub>2</sub>, NO<sub>2</sub>, CO, SPM, Ox, and others. These data are transmitted by microwave to the prefecture central supervision room and the environmental research center.

As for water pollution, to strengthen the control system, automatic water quality monitoring stations and water quality telemeter monitoring systems are implemented.

### 3.4 Pollution Prevention Agreement between Aichi prefecture and industries

The locations of major heavy and chemical industries that have giant plants are concentrated along the coastal industrial zone. These plants are likely to influence the area's environment with their large discharges of air pollutants or water contaminants. Therefore, Aichi government has concluded agreements with 11 giant plants operated by seven companies on pollution prevention.

The advantage comes from the pollution prevention agreement between Aichi prefecture and industries are 1. Possible to supplement the pollution related laws and adapt the original guidance, 2. Possible to enforce the sensitive measurements based on the geographical and social condition, or the real situation of each plant, 3. Possible to accelerate the future pollution control measures and the development of the pollution prevention technologies through the prior consultation between municipal corporation and plants. The plants accepted the terms and conditions on Pollution Prevention Agreement as an alternative effective ways to the law, and show a strong determination to respect it.

The features of pollution prevention agreement are 1. setting of the stricter standards, standards not decreed in laws, or specific pollution prevention measures such as maintenance of monitoring and measuring systems, and annual consultation, 2. advance dialogue with Prefectural office in the case of establishment or alteration of pollution related facilities, 3. participation of local authorities to annual consultation and their cooperation with Aichi.

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**- Advantages of pollution prevention agreement**

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- Supplementation of laws
  - Enforcement of the sensitive measurements based on the geographical and social condition, or the real situation of each plant
  - High acceptance of the decision at consultation
  - Acceleration of the future pollution measures and the development of the pollution prevention technologies
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**- Features of pollution prevention agreement**

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- Setting stricter standards or setting standards not degree in laws
  - Formulating monitoring/measuring systems
  - Advance dialogue with prefectural office in the case of establishment or alteration of pollution related facilities
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- "Pollution Prevention Agreement" is concluded by Aichi as the person concerned.

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1971	Nagoya Works, Nippon Steel Co., Ltd	Tokai City
1972	Chita Oil Co., Ltd, Japan Energy Co., Ltd	Chita City
	West Nagoya Thermal Power Station,	
	Chubu Electric Power Co., Inc.	Tobishima Village
1973	Aichi Oil Co., Ltd, Idemitsu Kosan Co., Ltd	Chita City
1974	Chita Plant, Daido Steel Co., Ltd	Tokai City
	Chita Plant, Aichi Steel Co., Ltd	Tokai City
1975	Chita Plant, Toho Gas Co., Ltd	Chita City
	Chita Thermal Power Station, Chubu Electric Power Co., Inc.	Chita City
1980	The Second Chita Thermal Power Station, Chubu Electric Power Co., Inc.	Chita City
1987	Hekinan Thermal Power Station, Chubu Electric Power Co., Inc.	
	Hekinan City, Anjou City, Nishio City, Takahama City	
1998	Taketoya Thermal Power Station, Chubu Electric Power Co., Inc.	
	Taketoya Town, Handa City, Tokonama City, Mihama Town	

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### 3.5 Special Loan system for Small and Medium companies

Small and medium companies may find difficulties to finance pollution prevention actions. Therefore Aichi has established Special Loan System to assist small and medium company's efforts for air, water pollution and noise etc. since 1965. Aichi accepts to finance to the expense for the relocation of the plants. Those companies can get the loans with free interest up to 50 million yen (up to 70 million yen for relocation.).

#### - Achievements of Interest Subsidy for Small and Medium companies : 1965—1999

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Number of interest subsidy	4,437
Sum of interest subsidy	13.6 billion yen

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<Table -4> Loan Terms for Interest Subsidy (1998)

Maximum amount of Loan	Within 90% of Subject Cost		
		Individual/Cooperation	Association
	Pollution Protection Facilities	50million yen	60million yen
	Relocation	70million yen	60million yen
	Low-pollution car etc.	30million yen	60million yen
Interest rate	Annual 1.8% (April 1998~ March 1999)		
Time period	Within 7 years (Unredeemable for one year, returned by monthly installments in equal amount)		

In another cases, subsidy to modernize the facilities by Aichi Industry and Labor dept. are used for the environmental preservation.

### 3.6 Promotion of Research and Development for Pollution prevention and Environment Preservation

Aichi's research institutes for industries have been taking care of the industrial problems which are directly-linked to the lives of the people with their industrial technologies as well as conducting the research and development by focusing on the closed systemization of Production process especially for small and medium companies and development of pollution prevention technologies to minimize the environmental capital investment. The researches for the environmental preservation for agriculture and effective utilization of wastes have been conducted at Agricultural experimental laboratory.

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### Example of Research and Development in 1976

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“Removal materials of harmful materials and development of separation technologies by absorption oxidation law”	Seto Ceramics Research Institute*
“Development of water processing medicine by practical use of ceramics wastes”	Seto Ceramics Research Institute*
“A study of closed systematization in plating factories”	Aichi Industrial Technology Center*
“Study on emulsified oil drainage processing system by electric resolution processing”	Aichi Industrial Technology Center*
“Pollution prevention and technology management of dyeing processing”	Owari Textile Research Center *
“Heavy metal measures examination”	Aichi Agricultural Research Center
“Measure examination about Cadmium pollution place improvement”	Aichi Agricultural Research Center
	Others : 11

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Note: They are reorganized as Aichi Industrial Technology Institute in 2002.

After that, the researches related to environment preservation have been conducted at Environmental research center, Industrial technology center, Agricultural experimental laboratory as well as Fisheries experimental laboratory.

### 3.7 Environmental Effect Assessment system

For the business and projects which could have significant impact on environment, it aims to investigate, predict and assess its degree of affection to the environment, and announce its result to the public, and make these business and projects desirable for environment preservation ground based on the opinion of prefecture, municipals and prefectual residents.

## 4. Environmental Preservation by Private Sector

### 4.1 Environmental preservation by Industries

Along with the environmental preservation activities by nation, prefecture, and local authority, the industries also had been persevering their efforts for pollution control and environmental preservation. First, they constructed the pollution control facilities for observance of the laws. Second, the councils by industry segments are voluntarily organized. The person in charge of the pollution control are assigned at companies, as well as qualified person as manager in charge of pollution control are appointed at a certain size of companies according to the law's provision. Third, they measure soot and swage proprietary and strengthen their self-management ability. In recent years, more and more companies 1. have sifted their production process from End Pipe to Cleaner Production to ensure the pollution control, 2. have used the pollution control specialists such as measurement equipment makers, environmental facilities makers and consulting companies, and 3. have introduced ISO14001 and green accounting.

The investment for pollution control facilities increased 4.4 times from 1970 to on peak of 1974. Iron and steel industry, transportation equipment industry, chemical industry, oil refinery industry and textile industry were major investors. The amount of investment during 1970 to 1975 by iron and steel industry, and transportation equipment industry accounted for about 40% of the total. The investment by iron and steel industry went mainly to air pollution prevention measurement and that of transportation equipment industry was used for water pollution prevention measurement.

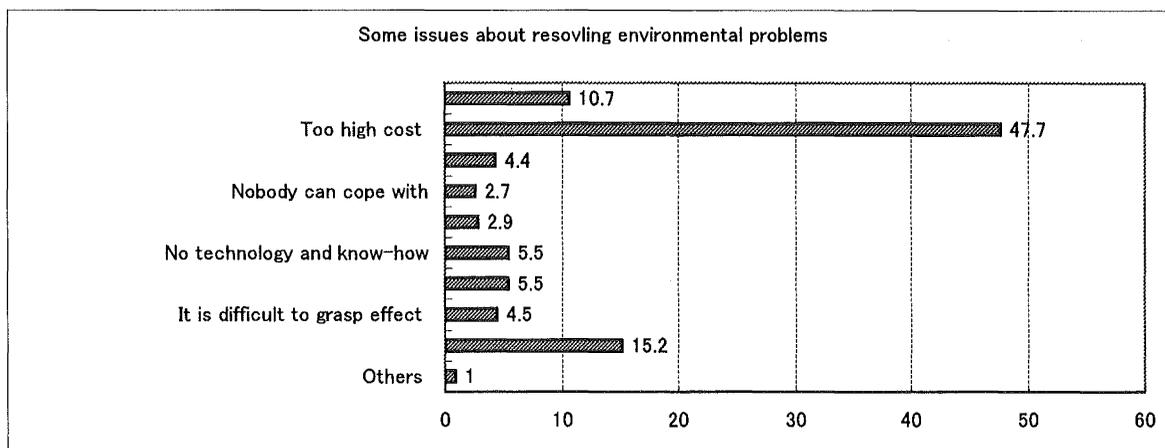
It can be said that the unit volume of process water per product shipments and the recycling ratio of used water can be one of good indicators to know the improvement of production process. Western part of Aichi facing Ise bay has suffered from severe ground subsidence. The accumulated ground subsidence level has reached over one meter. But it was solved by the decrease of the unit volume of process water per product shipments from 200m<sup>3</sup> in 1965 to 118 m<sup>3</sup> in 1974, and the increasing the ratio of recycled water to the total volume of fresh water from 38.5% in 1965 to 72.9% in 1974.

For air pollution, companies installed the smoke extraction and desulfurization equipments. But along with the strictness of the regulation to sulfur dioxide, oil refinery companies made efforts to provide low sulfur A type oil instead of C type oil.

Although the environment prevention measures at the bigger size of enterprises have been promoted under the Aichi's instruction, these are still not enough

for medium and small sized enterprises. According to an actual condition survey by the department of industry and labor in 2000, the some useful information is revealed as follows. First, the most important pollution prevention measures taken now are “industrial waste treatment”, followed by “recycling and reuse”, “economizing of energy”, and especially “countermeasures against dioxin”. Second, as a problem in taking pollution prevention measure, absolute majority point out too much cost as an obstacle.

The lack of technology, information and manpower are the problem, too. Third, although there are movements of the cooperation between companies or associations, the answer to “already cooperated” or “will cooperate” remained just at 20%. Fourth, although those companies who acquired ISO14001 certification remained just 5%, there are 60% of companies who are considering taking it. Fifth, regarding to the funding to proceed the environment protection, there’s high interest in such as interest-free loan and great expectation to the technological services.



From : Industrial Labors Relation Division of Aichi

#### 4.2 Environment Awareness of citizen

Aichi prefecture went through the several environmental lawsuits such as Nagoya Nanbu lawsuit (on trial) and Shinkansen noise lawsuit (it settled with JR). In recent years, the citizens’ group for the preservation of air, water and nature (NGO) have been increased along with the increasing of urban pollution related to daily life and the growing demand for the high quality welfare among citizen. The recent activity example of the citizens’ group are the environment preservation activities for the suspension of the Fujimae higata landfill project and degradation of the Aichi Expo.

The most of the today’s environmental problems such as the urban pollution and global environmental problem have relation to the daily life as well as industrial activity. Aichi prefecture promotes the citizens’ voluntary environmental preservation

activities and environmental education by providing the learning opportunities and information.

#### 5. Present Approach towards environment: Present / Future

Although the environmental control mainly to the factories worked well, SPM concentration in the air remains unchanged for the past 20 years because of the deterioration of air pollution due to the increase of the number of cars. Especially, the health problems caused by diesel exhaust fine particles (PM2.5) are taking a great concern among people. And the building of sewage system is insufficient compared with western countries, the problem of eutrophication in semi-closed water area such as small rivers and Ise bay are becoming significant along with the increasing of the household waste water.

Solid waste problem become acute. Historically, Japan has been putting a priority on combustion treatment of household solid waste. It, however, causes dioxin problem, so that more local authority regulates the combustion treatment. On the other hand, it is difficult to find a final dumping site, so that the urgent solid waste problems are still remained.

To tackle these problems comprehensively, Aichi prefecture has been working to formulate the environmental plan such as "Agenda 21" and "Aichi Eco Plan 21".

Agenda 21 was adopted at Earth summit in Brazil at 1992. After that, as an action agenda for more systematic and comprehensive approach to environmental preservation, Aichi Agenda 21 was adopted at 1994. Toward the environmentally symbiotic society, 21 kinds of action agenda such as waste reduction, energy conservation life, attention to waste water, natural environmental preservation and so on were provided on residents, enterprises, and authorities basis.

Furthermore, to promote the action against the global warming at local area, Aichi Eco Plan 21 was adopted in 1994. It was the basic plan for the Aichi global warming action. The administration, enterprises and residences are working toward the efficient use of energy, traffic control, afforestation plan, promotion of the recycle and green gas control.

## References

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