

## Highlights of Ambient Air Quality Situation in Guangzhou

### **I. Introduction**

To achieve the target of “building an ideal city for people to live and start businesses”, Guangzhou has implemented since 1998 the policies of “making a small change every year” and “making a medium change every three years” in respect of the provision of infrastructure in urban areas under which comprehensive town planning, construction, administration and improvement have been made. Having implemented the above policies, the environment in Guangzhou has seen great changes. Green mountains, clear water, blue sky, green land and a flowered city are the evidence of its improving environment. The “Five-year Comprehensive Action Plan for Renovation of the Urban Environment” was granted the “Dubai International Award for Best Practices in Improving the Living Environment” by the United Nations. With all these efforts, Guangzhou has moved a firm step towards the target of building an ideal city for people to live and start businesses.

Compared with 1998, a year before implementation of the policy of “making a medium change every three years”, ambient air quality in Guangzhou in 2001 has improved significantly with reduction by varying degrees in the concentrations of major air pollutants such as sulphur dioxide (SO<sub>2</sub>), total suspended particulates (TSP) and carbon monoxide (CO) as well as the dust level.

### **II. Ambient air quality situation**

#### 1. Monitoring points

Guangzhou already put in place an automatic air quality monitoring system as early as 1983. The monitoring points had been adjusted from 1992 to 1994. After obtaining the approval from the then State Environmental Protection Bureau in 1996, the authorities concerned started collecting data from the six adjusted monitoring points. As the designated urban zone is expanding, the monitoring points were further adjusted this year with the number increased to nine after the adjustment.

#### 2. Pollutants covered by the monitoring system

Before 2000, major pollutants such as SO<sub>2</sub>, nitrogen oxides (NO<sub>x</sub>), CO and TSP were included in the monitoring. In 2000, measurement of NO<sub>x</sub> was replaced by nitrogen dioxide (NO<sub>2</sub>) in accordance with the instruction of the State Environmental Protection Administration (SEPA). From June 2000, the concentration of respirable suspended particulates (RSP) has also been included in the monitoring.

### 3. Analysis Methods

SO<sub>2</sub> is analyzed by the method of pulse fluorescence, CO by infrared absorption, NO<sub>x</sub> and NO<sub>2</sub> by chemical fluorescence, TSP by filter lightening and RSP by β ray.

### 4. Comparison between ambient air quality in 2001 and 1998

In 2001, the average concentrations of major air pollutants in Guangzhou urban areas including SO<sub>2</sub>, NO<sub>2</sub>, TSP and RSP were all below the second-level annual averages stipulated in the national standards for ambient air quality. Details are shown in the table below.

Table: Monitoring results of major air pollutants in Guangzhou in 2001 and a comparison with the results recorded in 1998

Pollutants	SO <sub>2</sub>	NO <sub>2</sub>	TSP	RSP	CO	Dust Level
Unit	mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>	tonne/km <sup>2</sup> .month
Relevant standard	0.060	0.080	0.200	0.100	4.00	8.00
2001	0.051	0.071	0.150	0.073	1.97	6.26
1998	0.061	---	0.204	---	2.42	8.22
Change in %	-16.4	---	-26.5	---	-18.6	-23.8

Note: The relevant standards in respect of SO<sub>2</sub>, NO<sub>2</sub>, TSP and RSP are the second-level annual averages stipulated in the national ambient air quality standard (BG3095-1996). The standard for CO is the daily average while dust level is assessed by Guangzhou provisional standard.

## III. Major measures adopted to improve ambient air quality in Guangzhou

### 1. Improve the legal framework for environmental protection and strengthen law enforcement actions

During the Ninth Five-Year Plan period, various municipal laws and regulations on environmental protection including Guangzhou Environmental Protection Ordinance were made. We therefore take the lead in completing our own legal framework on environmental protection in accordance with the national environmental protection legislation. Moreover, improvements are being made to our law enforcement teams, enabling them to step up effective enforcement actions against any contravention of environmental protection laws and regulations.

### 2. Make huge investment in municipal construction with an increasing sum

devoted to environmental protection

From the implementation of the policy of “making a small change every year” in 1998 to the end of the policy of “making a medium change every three years” in 2001, a sum of over 460 billion yuan was invested in the municipal construction works and more than 170 projects were completed. The sum earmarked for environmental protection is also on the increase. Urban Environmental Protection Investment Index increased from 2.08% in 1998 to 2.16% in 2000. Big investment brings about big changes.

### 3. Fulfill environmental protection targets and obligations

Since 2000, Guangzhou municipal government passed the environmental protection targets and obligations in the form of instructions to different levels of authorities and departments. Audits and assessment of their implementation are conducted at the end of each year. To include the implementation of the environmental targets and obligations into the performance assessment of all authorities and departments is a fundamental way to ensure good environmental protection.

### 4. Continue to enhance industrial pollution control and comprehensive renovation of urban environment to fully implement the program of “One Control and Two Targets”

During the Ninth Five-Year Plan period, we continued to focus on industrial pollution control and comprehensive renovation of urban environment with a view to stepping up our control on both new and old pollutants. The smoke and dust reduction rate and purification rate for industrial emissions keep on improving, with an increase of 3.74 and 2.86 percentage points respectively in 2000 as compared with 1998. At the same time, efforts continued to be made to close down high polluting enterprises. In 2000 alone, 899 high polluting enterprises were made to close down.

The municipal government has placed great emphasis on the program of ‘One Control and Two Targets’. During the process, municipal environmental protection departments have made considerable efforts to guide enterprises to implement “the five integration”. The work to assist polluters to achieve the required standards was therefore smoothly completed. By the end of 2000, all 2 941 high polluting enterprises in the city attained the required standards on schedule.

5. Strengthen control on vehicular emission pollution by introducing legislation and making comprehensive arrangements

In 1996 and 1997, a number of laws and regulations were introduced to control vehicular emission pollution. Enforcement actions were also stepped up and comprehensive arrangements were made. A coordination group on the control of vehicular emission pollution directly under the municipal government was set up to coordinate road checks on vehicular emission to be conducted by municipal environmental protection authorities, public security officers and traffic police. On maintenance of motor vehicles, with the advancement of emission control technologies, a series of emission reduction products were introduced. Regarding pollution control on new vehicles, only those vehicle models approved by the relevant environmental protection authorities are allowed for sale and licensing since October 2000. On motor vehicle fuel, unleaded petrol has been available in the whole city since July 2000 and motor diesel classified as “the first class” or above was put on the market in October 2000.

As regards the problem of smoky vehicles, methods such as the use of fuel additive, retrofitting emission reduction devices and traps are being used on public diesel vehicles to reduce emission of black smoke. To strengthen control on smoky vehicles, municipal environmental protection departments have set up hotlines for people to report smoky vehicles and these cases will be referred to relevant departments for action.

6. Promote the use of clean fuel in catering industry

In 1999 and 2000, about 7 700 catering establishments changed to use clean fuel in moving towards the target of “From Oil to Gas”. Since then, public complaints against black smoke and cooking fume pollution caused by catering establishments dropped substantially. In 2000, the number of complaints reduced by 38.4% as compared with 1999.

7. Control pollution at source

Given the characteristics of environmental pollution in Guangzhou, Guangzhou Environmental Protection Bureau organized discussions to identify the sources of airborne particulates. According to the findings, dust is the major contributory factor. Actions therefore are directed at construction sites, demolition sites and road works to reduce dust nuisance. Statutory documents introducing good practices in carrying

out construction works and ways to prevent and control pollution were issued. To effectively control and improve air and noise pollution caused by construction works, law enforcement departments jointly conducted checks on construction sites to ensure works are in compliance with environmental protection legislation. Besides, a cleansing system to keep the city clean is being implemented. The system is in operation for 16 hours in some first and second level roads and 24 hours in some important roads. In old urban areas, dust nuisance caused by road traffic is reduced by sprinkling water. Some suburban quarries were closed down to reduce dust nuisance and trees were planted around the areas to green up the city.

After years of hard work, ambient air quality in Guangzhou is greatly improved. However, much work still needs to be done in future. With our concerted efforts, Guangzhou will become even more beautiful in 2010 in accordance with our policy of “making a big change in 2010”.