

## URBAN AIR POLLUTION IN HEBEI, CHINA

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From the end of the 20th century to the beginning of the 21st century, China has entered the process of large-scale urbanization and industrialization, accompanied by this process, environmental pollution problems also appeared, among which the air pollution problem in Hebei province is particularly serious.

This paper analyzes the causes of urban air pollution in Hebei province, expounds the harm of air pollution, and Take measures to control air pollution in Hebei province based on the experience of other areas.

*Keywords:* air pollution control, Hebei province, industrialization

Since the 21st century, China entered the stage of high-speed urbanization, industrialization development, has created a huge economic and social benefits, but also produced a serious ecological environment problems, such as frequent fog weather, inconvenient to people's production and life, health, Hebei province is the most serious pollution provinces in China, Air pollution there is even serious.

Hebei's 11 prefecture-level cities, with the exception of Zhangjiakou, Chengde and Qinhuangdao, are heavily polluted. In the air quality ranking list of 74 major cities in China, most of the 10 cities with the worst air pollution are in Hebei province [1]. Hebei is still the most polluted province in China. The study of air pollution in Hebei province is of typical significance for understanding air pollution in China.

The purpose of this study is to provide the methods to improve the air quality of Hebei province by analyzing the causes of pollution in Hebei province and drawing on the good experience of other regions.

**Analysis of reason of air pollution.** The air pollution in Hebei province is mainly soot pollution caused by coal for industry and heating. The main reasons are as follows:

*Natural factors make the Beijing-Tianjin-Hebei region easy to accumulate pollutants.* In terms of topography, Yanshan Mountain in the north and Taihang Mountain in the west encircle the area. The terrain is high in the northwest and low in the southeast, making it easy for pollutants to gather. From the perspective of climate, the prevailing northwest wind in winter, due to the mountain barrier, when the wind is small, the pollutants are not easy to diffuse. The prevailing southeasterly wind in summer diffused the pollutants in Tangshan, Langfang and other places to the whole region, and locked the pollutants in the Yanshan-Taihang Mountain range. Therefore, the interaction between topographic and climatic conditions is an important reason for the difficult diffusion of pollutants in this area.

*Industrial structure overly dependent on steel industry and other heavy industries.* The industrial structure of Hebei province is a heavy chemical industry system dominated by the secondary industry and led by the steel industry. Iron and steel, cement, glass, petrochemical, thermal power generation and leather are all key industries in Hebei Province, but these industries have high energy consumption and large pollutant discharge per unit output. By the end of 2014, there are 110 iron and steel production enterprises and 348 blast furnaces in the province, with an annual capacity of 269 million tons of iron. There are 305 bessaries and electric furnaces, with an annual capacity of 261 million tons [2].

*Cars account for a significant proportion of the means of transportation.* The proportion of highway freight in Hebei is high, and the contribution of NO<sub>x</sub> emission from motor vehicles is outstanding. In particular, diesel truck emissions accounting for less than 10 % of the vehicle ownership account for 70 % of the total vehicle emissions. Of the freight vehicles crossing the border, nearly two-thirds are heavy-duty diesel vehicles.

**Countermeasures against air pollution.** In order to prevent the worsening of air pollution, the state has issued a series of laws and regulations to control air pollution. Beijing is located in the core area of the Beijing-Tianjin-Hebei region. In order to improve the environment, Beijing adheres to the strategy of clean energy, vigorously promotes the reduction of coal burning in industry and daily life, and strives to build a clean energy system dominated by electricity and natural gas, supplemented by geothermal energy and solar energy. On the one hand, four gas-fired heat and power centers have been built, basically eliminating coal-fired boilers of 10 tons or less in the city and 35 tons or less in the built-up area, and realizing basically no coal burning in the industrial field. On the other hand, we intensified efforts to control loose coal, and vigorously implemented "coal to electricity" and "coal to gas". The total amount of coal burned in the city decreased from 23 million tons in 2012 to less than 6 million tons in 2017. Through the adjustment of energy structure, Beijing's air quality and air pollutant emissions have been significantly reduced [3].

Drawing on the successful experience of Beijing, Hebei should adopt the following measures to achieve the goal of achieving the emission of air pollutants from the standard to ultra-low emission and then to the overall ultra-low emission.

First of all, in the construction of urban industrialization, the use of advanced industrial technology, can effectively control the emission of industrial waste gas, reduce the pollution of waste gas to the environment. While continuing efforts to desulphurize, sell off coal and remove dust from key industrial enterprises and pollution sources, we will also introduce these measures into non-key areas so as to reduce overall emissions and intensity of air pollutants. Secondly, the emission standards of air pollutants in different industries will be improved so that all industrial sectors will comply with the emission standards,

non-industrial production sectors will gradually comply with the emission standards, and key industrial enterprises will implement ultra-low emission of air pollutants. We will promote the issuance of pollutant discharge permits to all industries and gradually close down industrial enterprises that fail to meet pollutant discharge standards. According to the investigation and study, found that adopt the way of power, hydropower, wind production can reduce industrial emissions, in the actual production process, we can reasonably use power and water, wind, the mode of production in today's industrial production, the most is fire production, carbon dioxide, sulfur dioxide emissions from the burning of a lot of, This approach is not conducive to China's environmental protection, so we should continue to vigorously develop clean energy such as water and wind, reduce industrial waste gas emissions.

Second, the implementation of regional collaborative governance in Hebei Province. Because air pollution can flow and spread, only coordinated governance, to achieve effective prevention and control. In implementing coordinated regional prevention and control, we should not only fully respect each region's right to development, but also respect each region's contribution to air pollution prevention and control. We can set up air pollution prevention and control organizations in prefecture-level cities to eliminate the estrangement between various departments, and set up multi-department consultation mechanism to realize multi-department collaborative governance, and bring the contribution of departments to air pollution prevention and control into the assessment system of urban development.

Hebei province, due to the serious emission of industrial exhaust gas, automobile exhaust emissions lead to a serious decline in ambient air quality, to people's health posed a threat. If you want to improve our air quality, we should start from now, and set up the consciousness of environmental protection, consciously to reduce waste emissions in the life, reduce industrial gases and car exhaust emissions, reasonable use of resources, development of more advanced technology to promote improvement of environmental air quality achieve the better effect of environmental air quality control.

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