Problems and Countermeasures of Pollution Prevention and Control in Anshan City

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Abstract: As an old industrial base in the Northeast and the steel capital of the Republic, Anshan City has environmental issues that are the fundamental factors restricting urban development. For a long time, the traditional resource-based industrial structure and extensive economic growth have indirectly deepened the environmental pollution problem in Anshan. This article first summarizes the outstanding problems in Anshan's environment, analyzes the causes of environmental problems, and proposes solutions to environmental problems. Pollution control in Anshan can promote industrial upgrading and industrial transfer in the city, and has a profound impact on Anshan 's battle to defend the blue sky, green mountains, and clear waters. Strengthen legal advancement, government guidance, and technical support to form a pollution prevention pattern of "clear goals, clear plans, and clear responsibilities", and strive to achieve "strength Anshan, quality Anshan, integrity Anshan, happiness Anshan, beautiful Anshan".

Keywords: Environmental protection, pollution preventionl, pollution control.

1. Existing Problems
1.1 Serious Haze Problem
The main cause of smog is PM2.5 in the air, that is, the fine particles present in the air are seriously exceeded, and Anshan City, as an important steel production and output base in the country, due to the expansion of economic scale and the acceleration of urbanization, The government and enterprises have increased a series of production activities such as mining, transportation and incineration of coal resources, resulting in the emission of large amounts of PM2.5 particles, which has seriously polluted the clean development of the entire city of Anshan City, which has hindered economic and social development. Continue to develop. In response to the intensification of environmental problems, the Anshan Municipal Government has taken some measures
to control the deteriorating air pollution, but there is still a big gap between the formulation and implementation of measures, and the haze phenomenon in Anshan still occurs from time to time.

1.2 Low Air Quality Level
In 2018, the number of days that the ambient air quality of our city reached Grade II and above totaled 299 days, an increase of 36 days year-on-year; the compliance rate was 81.9%, an increase of 9.8 percentage points year-on-year, but it was still lower than the provincial average number of days. The number of days during which the ambient air quality in urban areas reached the first-class standard was 53 days, an increase of 22 days from 2017. Inhalable particulate matter concentration, fine particulate matter concentration, sulfur dioxide concentration, nitrogen dioxide concentration and other indicators all decreased year-on-year. However, the annual average value of respirable particulate matter and sulfur dioxide in the main pollutants exceeded the national secondary standard. In 2020, at 12 o'clock on January 2, the three-level yellow warning for heavy pollution weather will be launched.

1.3 Water Pollution
The surface water has not reached the standard according to the functional area. The water pollution in Anshan has improved significantly in recent years, but the problem still exists. For example, in March 2019, Anshan Haicheng Lvyuan Water Purification Co., Ltd., due to abnormal operation of water pollution prevention facilities, caused the daily average value of ammonia nitrogen to continue to exceed the standard for 16 days, and the daily average value of COD exceeded the standard for 5 days. After discovery, it did not report to the environmental protection department. And no emergency measures were taken.

Nansha River, Yunliang River, Yangliu River, Wudao River and Haicheng River, which are the five tributaries of Anshan area, merged into the Prince River are all inferior Class V water quality. The main pollutants are ammonia nitrogen, anionic detergent, total phosphorus, chemical oxygen demand and biochemical oxygen demand. According to the water quality inspection of the section of the Taizi River Basin, the COD and mercury elements in the Anshan section of the Taizi River are close to or exceed the standard limits, while the arsenic and selenium elements are far below the standard limits. The monthly change of COD is obvious in the periods of high and low water. There are many reasons for groundwater pollution, and there are many kinds of pollutants. From the perspective of formation, it mainly comes from the liquid waste and solid waste discharged by industry and urban life, and the deterioration of groundwater quality caused by agricultural activities and mining activities. Anshan has
built new sewage treatment plants in Ningyuan, Dongtai, and Yongning in recent years, which has greatly improved the sewage treatment capacity. However, many industrial sewage and domestic sewage pollutants still flow into the Prince River through the Qianshan District, which brings a certain amount of groundwater quality threat.

1.4 Noise Pollution
The main noise sources that affect the acoustic environment quality of Anshan City are social life noise, traffic noise and construction noise. With the development of industrialization and urbanization, the change of urban pattern, the increase of motor vehicle ownership, the expansion of commercial area and the increase of civil engineering, the monitoring of noise functional area in Anshan City has not met the actual needs of today's society. The standard rate of environmental noise in industrial area is relatively low. The mean value of environmental noise in each region increased and exceeded the national standard. Local and sudden noise pollution still exists, which is one of the main reasons for environmental petition. The production noise of Angang Steel still has a serious impact on the neighboring residents.

1.5 Low Comprehensive Utilization Rate of Waste
The comprehensive utilization rate of solid waste is low, and the disposal site and supervision system are not standardized. The annual amount of industrial solid waste generated in Anshan City is nearly 30 million tons, but the comprehensive utilization rate is only about 24%. A large amount of solid waste mainly depends on tailings dams or storage. In addition to tailings dams, other storage sites are not standardized and generally lack regulatory measures. In addition to the annual accumulation of solid waste, not only occupy land, but also cause serious pollution caused by loss (such as dust pollution and surface runoff pollution).

1.6 Mine Ecological Environment Damage
As an old industrial base in the Northeast, Anshan is also a major mineral resources market. There are five iron mines around the urban area of Anshan City, which are located in the urban planning and construction. With the development of the mine, there is a large area of the exposed surface of the mine, which has caused serious soil erosion and severely damaged the mine environment. Due to the illegal production phenomena such as disordered, crazy, and unreasonable mining in mines, which have a negative impact on the ecological environment, the government of Anshan City has too much debt for environmental pollution, and should carefully reflect on the problem and "look back" to correct the problem. In recent years, our city attaches great importance to the mine ecological management project, and continues to carry out
ecological restoration of the rock discharge yards and tailings ponds around Anshan City, and carefully builds a green ecological mine to achieve sustainable development of the mine. At present, Anshan Iron Mine, The mines of Qianyu Tailings Reservoir, Dagushan Iron Mine, Yanqianshan Iron Mine and Qidashan Iron Mine have been rehabilitated to restore 24 million square meters of vegetation.

2. Cause Analysis

2.1 Causes of Haze

As a city driven by heavy industry, Anshan mainly depends on coal and steel resources for regional development. Among the reasons for the occurrence of smog, one is that the city’s thermal power, steel, building materials and other atmospheric heavy pollution industrial enterprises have large coal consumption, and non-heating coal-fired boilers in the city burn polluted air. The second is Anshan’s extensive economic development model, which is backward. The technology and waste treatment technology have cast a mysterious veil over Anshan. The third is construction dust in urban development and winter heating in some areas, which will also increase the occurrence of smog and have a great impact on the work and lives of local residents. The current urgency of air pollution control in Anshan City and the severity of the deterioration of the atmospheric environment have warned the city’s economic development and people’s health.

2.2 Causes of Water Pollution

Ignoring the effects of iron, manganese, total hardness, and nitrate nitrogen, man-made pollution in the area accounted for 22.6% of the total number of monitoring, of which mainly ammonia nitrogen pollution accounted for 86% of the entire pollution factor. Therefore, due to factors such as river infiltration and sewage infiltration at Yangeryu Garbage Dump, corporate sewage, rural life, aquaculture, and chemical fertilizer application in farmland, the main pollution factor of groundwater in Qianshan District is ammonia nitrogen pollution, followed by total bacteria and The two microbiological indicators of coliform bacteria. According to the statistics of the boundary line with the distance of 500 meters from the river, 64% of the man-made groundwater wells are close to the river channel, and other monitoring wells are far away. Secondly, the depth of groundwater contaminated wells ranges from 5 meters to 130 meters, which means that in some local areas, the quality of shallow or deep groundwater bodies has been polluted to varying degrees. As long as there is a pollution source, the groundwater near the pollution source may be polluted. Therefore, the key to protecting the quality of groundwater resources is to cut off the source of pollution and prevent the continued invasion of pollution.
2.3 Causes of Noise Pollution
With economic development and changes in the urban landscape, the number of motor vehicles has increased, the commercial area has expanded, civil engineering has increased, and the mixed phenomenon in the functional area is serious. However, the continuation of the original monitoring noise in the noise functional area of Anshan City does not meet the actual situation. The average noise of each functional area began to increase and exceeded national standards. At present, the main noise sources that disturb the work and life of residents are industrial noise, traffic noise and local construction noise. The noise of industrial enterprises has been improved by dividing industrial parks, but the progress of Anshan's industrialization process still generates a lot of industrial noise. With the growth of motor vehicles and high-speed trains on the road, traffic noise will affect the lives and rest of residents near the road. Noise pollution should improve after Anshan in 2020, because many commercial areas are completed during the 13th Five-Year Plan period and the commercial areas of Anshan are also relatively concentrated, so local construction noise should be reduced.

2.4 Causes of Waste Utilization
The problems of fixed waste disposal in Anshan City are mainly reflected in the low rate of industrial solid waste disposal. The problems are concentrated in the treatment of fly ash and the disposal and utilization of tailings. As an important steel production base in the country, Anshan has a large accumulation of various industrial waste residues and serious pollution problems. Fly ash is the largest source of coal-fired emissions from thermal power plants, and its harm is gradually being valued by the government and enterprises. Anshan's Wanhai Energy Haicheng Co., Ltd., Thermal Power New Materials Co., Ltd., No. 1 Power Plant, and No. 2 Power Plant emit a large amount of fly ash every year, which must be comprehensively utilized and properly handled.

3. Countermeasures and Suggestions to Solve the Problem of Environmental Pollution in Anshan City
3.1 Using Xi Jinping's "Six Principles" to Guide Our Environmental Management Work
Standing at the height of human development and summarizing the "six principles" formed from long-term practice is the essence of Xi Jinping's ecological civilization thought. The details are as follows: (1) Adhere to the harmonious symbiosis between man and nature, adhere to the principles of conservation priority, protection priority, and natural restoration, protect the ecological environment like protecting eyes, treat the ecological environment like life, and let the natural ecological beauty stay in the world, But also with tranquility, harmony and beauty. (2) Green water and green hills are Jinshan and Yinshan, implement the innovative, coordinated, green, open and
shared development concept, accelerate the formation of a spatial pattern, industrial structure, production methods and lifestyles that conserve resources and protect the environment, leaving a natural ecology Time and space for rest and recuperation. (3) A good ecological environment is the most inclusive livelihood and well-being of the people. It insists on ecological benefits for the people, ecological benefits for the people, and ecology for the people. It focuses on solving prominent environmental problems that harm the health of the people and continuously meets the growing needs of the people for beautiful ecological environments. (4) Mountains, waters, forests, fields, lakes and grasses are a community of life. It is necessary to make overall plans, take overall measures, take multiple measures, and carry out ecological civilization construction in an all-round, all-regional, and whole process. (5) Protect the ecological environment with the strictest system and the strictest rule of law, accelerate system innovation, strengthen system implementation, and make the system a rigid constraint and an untouchable high-voltage line. (6) To collaborate on the construction of a global ecological civilization, participate deeply in global environmental governance, form a solution to world environmental protection and sustainable development, and guide international cooperation in addressing climate change. This is not only the responsibility of the great power China has taken on its own initiative, but also the basic guiding ideology for promoting the work of environmental pollution and environmental governance in Anshan City.

3.2 Improve the Laws and Regulations of Public Participation
Anshan Municipal Government and the Environmental Protection Bureau should establish relevant laws and regulations to make the public participate in environmental governance work legally based, including: First, public participation in the process of formulating laws and regulations on environmental governance should be improved. The vital interests of the masses allow the masses to participate in the process of formulating laws and regulations, express their opinions and suggestions, improve the applicability of laws and regulations, and give the public the relevant right to know; According to laws and regulations, the public, as the supervisor and executor of environmental governance, has the relevant supervisory power over the government's environmental governance. The public's evaluation of the governance work can better urge the government's work, and it has a good effect on the prevention and control of the pollution problem in Anshan.

3.3 Change Energy Structure
Solve the fundamental problem of industrial structural air pollution. According to Anshan's economic development plan, the characteristics of our city's
resource-consuming cities, which are dominated by the steel industry, are unlikely to change significantly. In response to this situation, our city must integrate and reorganize the steel industry, reduce steel production capacity, and promote industrial upgrading. Iron and steel enterprises not only need a lot of energy consumption support, but also a large consumer of energy consumption and sewage. The three-in-one reduction of production capacity, energy conservation, emission reduction and atmospheric governance should be promoted in a centralized manner. 2018 is the first year of our province’s three-year action to win the blue sky defense battle. Our city adjusts and optimizes the industrial structure, energy structure, transportation structure, The land structure has completed the desulfurization and denitrification project of Anshan Iron and Steel’s 12 coke oven flue gas and the Shengmeng gas coke oven desulfurization and denitrification project, and has achieved stable emission of coke oven flue gas. Eliminate 329 small coal-fired boilers.

Second, we must cultivate strategic emerging industries. Develop new materials and advanced equipment manufacturing industries, cultivate and develop biological, electronic information, new energy, energy conservation and environmental protection, and new energy automobile industries, and let strategic emerging industries gradually become the leading forces of economic and social development. Therefore, the promotion of the use of clean energy and new energy and the reduction of large coal consumption is the fundamental way out to solve our city’s air pollution, especially sulfur dioxide pollution and improve air quality.

3.4 Speed Up the Construction of New Areas and the Adjustment of Industrial Layout
Effectively expand environmental capacity. At present, industrial enterprises in the urban area of Anshan are highly intensive, and it is necessary to pay a high economic price to control air pollution under the existing conditions. The single role does not solve the problem of pollutants, but it can make full use of environmental capacity and reduce the problem of overlapping sources of pollution and cross-pollution. It is the way to reduce environmental pollution as a whole and with less investment and effective results.

3.5 Strengthen the Centralized Treatment of Sewage
Effectively reduce construction costs and operating costs, and solve river pollution. With the current predominantly urban sewage pollution load, the way to solve the pollution of the water environment is to focus on governance. Therefore, accelerating the construction of centralized sewage treatment facilities and integrating existing sewage treatment facilities is the most economical and effective way to solve the pollution of rivers in our city.
Strengthen monitoring by region and clarify corporate responsibilities. To strengthen monitoring and management of areas with many coal factories in Anshan City and many chemical enterprises. The implementation of a reward and punishment system can effectively control water pollution, and reward areas where the sewage treatment is good or even with greater progress in sewage treatment, and the responsibility of specific enterprises within the region will be implemented.

Increase the water pollution control fee and punish enterprises that fail to meet the water quality standards. Add the measurement indicators of water resource pollution control to the current tap water charging standards, especially the standard charges for the division of domestic sewage and industrial wastewater, and implement the high-level charging level for those enterprises that do not meet the standard of sewage treatment, and the state of compliance with the sewage treatment is in good condition. And the enterprises that carry out the reuse implement a low-level charge level, so as to inspire related enterprises and communities to reduce water pollution.

3.6 Strengthening the Renovation of Urban and Surrounding Environment
Dust and external influences are the main factors of particulate pollution in our city. Therefore, the focus of comprehensive urban environment remediation should be on industrial area sources, low emission sources, construction sites, road dust, solid waste storage sites and other dust control, as well as urban areas Covering and greening the bare land, comprehensive improvement of the surrounding environment of the city.

3.7 Vigorously Develop Circular Economy and Clean Production
Rely on environmental scientific and technological progress to solve environmental problems. Circular economy and clean production are effective means to reduce resource consumption and pollutant emissions. Environmental science and technology progress is the basis for solving environmental problems. As a resource-consuming and heavily polluted city, our city should be especially strengthened, and in the long run it is also the fundamental way out for the sustainable development of our city and solving environmental problems. The wind protection, sand fixation and greening project has been implemented. Up to now, a total of 44.74 hectares of bare ground has been completed. Increased comprehensive dust control and straw burning, and effectively controlled dust pollution. A complete automatic monitoring system for ambient air has been established, and three counties (cities) have established automatic monitoring substations. Key industries such as iron and steel, thermal power, cement and coal-fired boilers over 20 tons are basically equipped with online monitoring facilities and networked with provincial environmental protection departments to achieve effective supervision of pollution sources.
According to the city's situation, the focus of the circular economy development is the metallurgical industry. The focus of cleaner production should be on energy saving and water saving, and the focus of environmental technology should be on carrying out technical breakthroughs such as comprehensive utilization of solid waste.

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