Analysis on Environmental Problems and Countermeasures In The Process of Steel Material Manufacturing

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Abstract. Since the reform and opening up, China's industrialization has advanced rapidly, the overall level of industry has improved markedly, and its comprehensive national strength has been further enhanced. Among the more than 500 major industrial products, the output of many kinds of products ranks first in the world, and China has become a veritable industrial power. But behind this, many environmental problems in the manufacturing process of steel materials have had serious consequences for the ecological environment in which we live and develop, and have had many impacts on our quality of life and physical health. This paper focuses on the causes of environmental pollution problems in the steel industry, and proposes solutions to these problems, providing reference for the sustainable and healthy development of the steel industry.

1. Introduction
Since the reform and opening up, China's industrialization has advanced rapidly, the overall level of industry has improved markedly, and its comprehensive national strength has been further enhanced. Among the more than 500 major industrial products, the output of many kinds of products ranks first in the world, and China has become a veritable industrial power. But behind this, many environmental problems in the manufacturing process of steel materials have had serious consequences for the ecological environment in which we live and develop, and have had many impacts on our quality of life and physical health. This paper focuses on the causes of environmental pollution problems in the steel industry, and proposes solutions to these problems, providing reference for the sustainable and healthy development of the steel industry.

2. The impact of three major types of pollutants in steel production on the environment
The three major types of pollutants in steel production are atmospheric pollutants, wastewater pollutants and solid waste. In the production of steel materials, the discharge of three major types of pollutants is very large, especially atmospheric pollutants. The harmful components in the exhaust gas emitted by the metallurgical enterprise to the atmosphere are SO2, NOX, CO2, and the exhaust gas also contains a large amount of dust. The emission of these atmospheric pollutants has a huge impact on the environment in which we depend for survival and development. The main manifestations are

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global warming, melting glaciers, frequent haze, and reduced visibility, which seriously affect our quality of life and for people. Health poses a huge threat. Nowadays, the phenomenon of PM2.5 index explosion occurs frequently in many places, and the visibility during the day is less than tens of meters, which has caused adverse consequences such as highway road closure, aircraft grounding, bus line suspension operation, etc., which seriously affect people's daily life. In addition, the discharge of wastewater pollutants and solid waste has serious adverse consequences for the groundwater source and the environment in which animals and plants are grown. For example, crops in contaminated areas cannot grow normally, and groundwater sources are destroyed. In short, the “three wastes” in the production of steel materials pose a serious threat to our ecological environment.

3. The reason for the large amount of pollutants in the manufacturing process of steel materials

3.1. The overall level of production technology and equipment in the industry is not high
There are several problems in China's steel industry products, high value-added products are insufficient, low-level production capacity is too large, and quality cannot meet market demand, resulting in serious waste of resources, and thus serious environmental problems. In addition, due to the large differences in water resources in the north and south of China, the water resources in the south are relatively sufficient, especially in the river basins, there is no shortage of water resources, but the water recycling rate of southern enterprises is very low, and the wastewater treatment of small and medium-sized steel enterprises These reasons, such as lower efficiency, have increased the gap between the overall water consumption level of China's steel industry and foreign countries to a certain extent. The technological innovation system of most steel enterprises has not yet been fully formed, the foundation of independent innovation is weak, and there are not many independent innovation achievements in process technology equipment and key varieties. Process control technology and some key equipment still rely mainly on introduction, and insufficient investment in cutting-edge technology research and development.

3.2. Industry environmental protection measures are insufficient
China's sulfur dioxide waste gas treatment and emission technology has a large gap with developed countries, and it is impossible to fully realize the total control target. The carbon dioxide emissions and heavy metal emissions still have excessive standards. China still has many problems in the flue gas desulfurization device, and lacks the desulfurization process that meets the development requirements. China's coal and iron ore generally have high sulfur content, and foreign desulfurization technology cannot be applied to China. The substances produced after desulfurization cannot be reused, and the cost of the desulfurization device is also high. According to the current configuration requirements of the desulfurization wastewater treatment plant in China, small and medium-sized enterprises are still unable to bear the cost of equipment purchase.

3.3. Low level of clean production in the industry
At present, only the clean production process of Baosteel in China's steel industry can be compared with the international first-class level, and some small and medium-sized enterprises are still lagging behind in clean production technology. Due to the lack of advanced energy-saving production processes, the energy consumption and resource consumption of the steel industry are also high.

3.4. Some enterprises have a slack in their minds
The development of iron and steel enterprises is uneven. For some large steel companies such as Baosteel and Anshan Iron and Steel, environmental issues have always been paid attention to. For some small and medium-sized enterprises, their basic conditions are general, how to improve the environment in the process of manufacturing steel materials. The pollution problem is not paid enough attention, and the effective measures taken are not enough. There is a slack in thought.
4. Countermeasures for improving environmental pollution problems in the steel industry

4.1. Eliminate backward enterprises and optimize enterprise structure
China's economic development has entered a new normal, in which the mode of development should shift from scale to quality and efficiency, especially for the steel industry. As the resource ecological environment is constrained and the cost of labor and other factors rises, the steel industry, as a resource- and energy-intensive enterprise, must eliminate some of the backward enterprises, optimize the enterprise structure, and actively adapt to the new economic normal. In addition, China has already opened a new era of ecological civilization at this stage. To build a beautiful China, we must further effectively solve the environmental problems that arise in the production of steel materials and promote green development. For backward enterprises with more serious environmental problems, they must be eliminated.

4.2. From the source of pollution, implement a special accountability system
In the production process of steel materials, low-contamination materials should be selected from the selection of raw materials. Only in this way can we ensure that environmental pollution is reduced as much as possible in each step of the manufacturing process. In addition, in the manufacturing process of steel materials, it is necessary to be responsible to the people, to implement a special accountability system, to ensure that each step in the manufacturing process is responsible for the individual, for example, for the selection of raw materials, there is a person responsible for selecting suitable low-pollution materials. Once there is a problem with the raw materials, someone can immediately assume the corresponding responsibility.

4.3. Strengthen technical input and innovative production methods
For the innovation of the production process of the steel industry, various companies have been actively exploring. The steel industry should establish an environmental support system, comprehensively combine design units and scientific research units, and increase investment in environmental protection and energy-saving technology research, and implement clean production in production. It should also be monitored in real time during production to ensure that environmental pollution is reduced during the production process.

4.4. Improve laws and regulations and strengthen legislative supervision
To regulate the production of steel enterprises, laws and regulations are the most powerful way. At different stages, enterprises need to have green development plans that are applicable to them, so that enterprises have clear green development goals, supporting means and safety measures. We will improve relevant environmental protection laws and regulations, use the legal system to regulate the environmental awareness of steel enterprises, strengthen legislative supervision, and maintain long-term stable development of enterprises.

4.5. Strengthen exchanges between domestic and foreign steel companies and introduce foreign advanced environmental protection technology experience
In recent years, China's steel industry, as the forerunner of supply-side structural reforms, has broken through the overcapacity of production and has withstood the test of rebirth of the fire. The overall recovery of the industry has been improved, the level of energy conservation and environmental protection has improved significantly, and environmental quality has improved significantly. At the same time, however, China's steel industry still has contradictions that are not fully developed, and there are still “bottlenecks” in energy conservation and environmental protection technologies. At present, China has elevated ecological civilization construction and environmental protection to a new height. Building a strong, democratic, civilized, harmonious and beautiful modern power is the historical responsibility given to us by the new era. The Chinese steel industry must work together with the global steel industry to promote the advancement of steel energy conservation and
environmental protection technology. This requires the steel industry to strengthen technical exchanges at home and abroad, introduce foreign environmental protection experience, learn from each other, and jointly explore a road to improve environmental problems in the manufacturing process of steel materials.

5. Conclusion
The steel industry is a heavily polluting enterprise, effectively solving the environmental problems of steel materials in the manufacturing process, and plays a vital role in the construction of ecological civilization. As the basic industry of the national economy, the steel industry is an industry that needs to implement the basic national policy of conserving resources and protecting the environment. Under the guidance and promotion of the competent government departments, iron and steel enterprises should comprehensively establish the concept of energy conservation and emission reduction, formulate medium and long-term green development strategies and plans, optimize the internal structure of enterprises, eliminate backward enterprises, and continuously improve the production technology level of the industry. To make greater contributions to the high quality development of the steel industry. Full implementation of the source of governance, the implementation of a special accountability system, improve relevant laws and regulations and improve supervision, to ensure that the steel industry to adapt to the new economic normal as soon as possible, and fully realize the resource utilization and energy-saving production targets.

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