

# Analysis of the Current Situation of Industrial Solid Waste Pollution and Methods of Environmental Protection and Prevention

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## Abstract

With the rapid development of society and economy, environmental problems are becoming increasingly serious and the deterioration of ecological environment has brought great harm to people's body and spirit. In the production process, the industrial solid waste produced will inevitably have some impact on the environment. How to effectively solve these problems is the main issue to be discussed in this thesis, with a view to making a useful contribution to the development of environmental protection.

## Keywords

Industrial solid waste, Pollution status, Environmental protection

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With the growing demand for energy and the increasing rate of industrialisation, the production of solid waste is also increasing. To get a reasonable solution and improve environmental benefits, the environmental problems caused by industrial solid waste need to be managed at source to achieve a harmonious development of industry and ecology.

## 1. Industrial solid waste

The solid waste produced in industrial production is known as industrial solid waste. As the quality of human life and material standards continue to improve, the demand for various energy sources is increasing day by day. As China is a large energy consuming country, the pollution of the ecological environment by the industrial solid waste it produces is very serious. At this stage, China's industrial solid waste can be mainly divided into fly ash, smelting waste slag and so on. However, due to its large production volume, complex types and large land area, its production and emission basically covers the entire production process. Secondly, the manifestation of pollution symptoms is not particularly serious and often takes a long time to become apparent [1]. In addition, it is hazardous to the environment and human health while also having potential applications.

## 2. The current development of industrial solid waste in China

### 2.1 Pollution of the atmosphere

The impact of industrial solid waste on the environment is threefold: firstly, when the handling and disposal of industrial solid waste is carried out, large amounts of dust and toxic gases are generated, which have an impact on the environment. The second reason is that, under the influence of high winds, fine particles and dust from industrial waste can be carried in the wind, causing a certain impact on the atmosphere, and in addition, a large amount of acid and heavy metals can be generated during

the combustion process. Thirdly, because industrial waste is generally handled in a concentrated manner, it has to be piled up to a certain extent when it is moved, and when it is piled up, harmful substances can penetrate into the soil, thus producing toxic gases. Carbon dioxide and methane, for example, can, over a long period of time, accumulate and lead to fires, or explosions.

## **2.2 Soil contamination**

As a rule, the companies concerned take these abandoned industrial wastes and pile them up randomly in open areas. Because they are not protected, these wastes are then eroded by rainwater and slowly seep into the soil, which then spreads out. As the soil accumulates harmful substances within a certain range during some kind of aggregation, it causes changes to its internal structure and composition, which can be extremely harmful to the growth and development of plants and deprives the soil of effective exploitation. According to the relevant studies, if a nickel-chromium-plated battery is placed in the soil, it will have a certain corrosive effect on the soil within one metre of the area, especially in acidic soils.

## **2.3 Water pollution**

Firstly, industrial solid waste can have an impact on surface water bodies. When the waste is discharged, some of the tiny bits of dust are blown into the air and then blown away by high winds, or they accumulate on the surface due to rain and other reasons and eventually dissolve, thus causing some harm to fish and other life in water bodies and even leading to their extinction [2]. Secondly, industrial solid waste, when exposed to rain and snow, produces large amounts of leachate, and these toxic pollutants can infiltrate through the soil and into the ground, thus causing the groundwater not to be used properly and causing great harm to the surrounding inhabitants and organisms.

## **3. Causes of industrial solid waste pollution**

With the development of industrialisation, China is facing increasingly serious environmental problems and gradually threatening people's safety, so it is important to provide an in-depth analysis of the environmental problems they generate.

### **3.1 Lack of government regulatory efforts**

Since industrialisation is the cornerstone of national economic development, many countries have given it a great deal of support, while neglecting to pay attention to environmental protection. This is also the case in China, on the one hand to promote the development of the industry, and on the other hand because of the lack of corresponding regulations and institutions, making many enterprises engaged in the process of chemicals only focus on production and neglect their disposal; secondly, poor supervision, the main problem of the petrochemical industry in China at present is that there is no place to store and dispose of solid waste, and in the end they have to dispose of it themselves, causing a great impact on the surrounding environment, impact on the surrounding environment.

### **3.2 Lack of production management systems in enterprises**

As the plant is the main link in the implementation of the production process, the absence of a strict production management system will lead to a lack of technical guidance, resulting in a decrease in the efficiency of the use of resources and thus the generation of solid waste. In addition, the waste generated during the production process is not scientifically planned and effective disposal methods are not developed, resulting in a haphazard discharge of waste water by technicians, resulting in a waste pile generated during the production process. Not only does this have a detrimental effect on the work at the site, it can also cause harm to the health of the workers and can lead to safety accidents at the workplace due to the interaction between the waste materials.

### **3.3 Outdated technology and equipment**

Industrial production inevitably produces a large amount of waste, for which reasonable process optimisation and equipment improvement can reduce its output and increase its resource utilisation. However, many factories have equipment that is in an ageing state and do not pay attention to maintenance, resulting in equipment that does not work properly or has leaks that affect the quality of the product [3]. In addition, due to the long-term lack of technological innovation in many enterprises, the original production process gradually shows energy consumption and environmental problems, which not only increases the cost of production, but also causes environmental pollution and affects the overall development of the enterprise.

## **4. Environmental protection and prevention measures for industrial solid waste pollution**

### **4.1 Improving production technology**

According to the research, it was found that most of the factories in China do not adopt modern production equipment and processes, resulting in the production of a lot of industrial solid waste and the low level of resource utilisation in the production, leading to a waste of resources. To achieve the discharge of industrial solid waste, the optimisation of resources must be carried out in a rational manner, which requires the rational improvement of the original outdated production technology. To this end, production processes must be improved, production efficiency increased and resources used rationally. Using modern technology, resources are allocated and laid out in a scientific and rational manner, with emphasis on both industrialisation and further research into waste disposal technology so that they can be turned around. Moreover, for an enterprise to develop and grow, it must firstly have a good foundation and secondly, it must have the support of the state, so each enterprise must develop an effective production plan for the local situation.

### **4.2 Rational use of resources**

The resourceful use of waste can reduce the production costs of enterprises as well as reduce the amount of waste discharged and the pollution of the atmosphere, soil and water sources. To this end, the government must make full use of its functions to exercise effective macro-control over industrial production and waste recycling in all sectors, instilling the idea of protecting the environment and everyone's responsibility into all strata of society and drawing widespread attention to it. By providing major enterprises with preferential measures in environmental protection, we will promote their awareness in environmental protection and their own self-consciousness in all aspects to achieve energy conservation and emission reduction.

### **4.3 Resource integration and institutional improvement**

China has developed measures to deal with industrial solid waste, however, due to various factors, it has not been possible to implement them. One of the important factors lies in the fact that the government has not publicised this enough, and many enterprises know nothing about it, which eventually results in a situation where there are no raw materials. The management of industrial solid waste in China is still in its infancy, and the lack of a basis for its treatment and management has had a great impact on its management. To solve this problem, it is necessary to integrate the existing resources in a timely and effective manner, to establish a sound management system for the effective production and use of industrial solid waste, and to control it in a strict proportion, which is effective from a market economy point of view and can be used efficiently while avoiding pollution [4-5]. Therefore, it is important to change the traditional concept of production, to have more knowledge of the relevant policies, to keep production development in line with the times, to change the mode of production and to improve the overall operation of enterprises.

### **4.4 Step up publicity**

Protecting the environment is a responsibility that should be borne by every person living on this planet. The government should give full play to its role and carry out environmental protection work in a variety of ways and means so that more people are aware of the dangers of industrial solid waste, so that they are always self-reflective and subject to the attention of society. In addition, a reward and punishment mechanism should be set up to reward companies with good performance and impose severe penalties on those who violate the rules.

### **4.5 Effective disposal of solid waste**

Solid waste from industrial production must be planned effectively to prevent mixing together and can be separated, recycled and secondarily processed to unlock the potential of metal waste and put to secondary use. The salt sludge produced can be chemically separated to extract useful components and excess waste slurry extracted, which is then tested and only discharged when it meets national standards [6-8].

## **5. Conclusion**

As industrial solid waste is generated in large quantities, the environmental damage caused is increasing. As a child of nature, everyone has a responsibility to protect "Mother Nature". Therefore, the authorities should step up their advertising campaigns for these companies, set up appropriate regulations and monitor them closely. Every production company must continue to transform its technology and recycle its waste in order to save costs and reduce solid waste emissions, thus promoting sustainable industrial and environmental development.

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