

# Study on Geological Storage and Environmental Co Development of "Three Wastes" in Coal Mine

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**Abstract:** Coal mine resource reserves have always been the basic material basis of natural production that the entire human civilization system must have. At present, with the continuous deepening and development of the socialist social, industrial and agricultural science and technology as well as the construction process of production culture in China, people's spiritual, material and living standards have been generally improved, and social development requires that the demand for resource mining of the reserves of various important coal mine resources in China is becoming increasingly large. The pollution characteristics of the "three wastes" in coal mines (mainly mine water, coalbed methane and coal gangue) are also becoming and reflecting the serious and complex energy and environmental pollution control problems that are particularly prominent in China at present, and will gradually become a field of widespread concern and international attention worldwide.

**Keywords:** Coal Mining; Three Wastes Management; Environmental Protection of Mining Area

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## Introduction

Due to the geological storage problem of coal mines, the direct discharge of underground water brings a lot of industrial pollution and long-term continuous infiltration of waste water, which will indirectly endanger the urban ecological water resources in the entire underground area due to the direct rainfall, aggravate the sustainable water supply tension and flood control tension of water resources shortage in the seriously water deficient areas of the city, and destroy the two-way supply and balanced utilization of water systems to urban surface water and underground water, This has led to the regional depletion crisis in large areas of the city and the serious drying up of the urban river flow. Some harmful exhaust gases and toxic exhaust gases released from underground coal mining may directly cause greater chemical pollution and harm to the atmospheric environment of surrounding cities. Long term continuous or large amount of continuous open-pit production and mining activities in coal mines may lead to the production of various industrial waste gas pollutants exceeding the standard and emission, which will affect the local atmospheric environment. At the same time, it will directly deteriorate the physical properties of the surface soil, and the growth environment of crop seedlings will also suffer some direct damage, resulting in serious farmland water and soil pollution prevention and other pollution problems.

## 1. Treatment and resource utilization of "three wastes" in coal mines

The supply and supplement resources of mine water mainly include a large number of natural underground supply water sources and natural groundwater from the underground coal seams around the mining area and where the ore body is located, in the fissures and distributed in the developed mine roadway or in the underground of the nearby mines, or because the surface water seeps into the surface fissure layer of the mining area, However, the surface fissure water resources of a small part of the mines that can directly penetrate into the mine and the underground rock fissure water are supplied. In the active system of coal mining or construction coal mining process, groundwater fluid often releases a series of complex geophysical

and chemical reactions through contact with surrounding underground coal seams, rock fractures and other substances, and its hydrogeological characteristics are often completely dependent on a series of complex hydrogeological environmental characteristics of water in the surrounding underground raw coal area and various mineral chemical compositions of the ore bearing water body of the surrounding coal bearing strata. The regeneration and reuse technology of mine water treatment mainly includes water regeneration under the shaft and water treatment above the shaft. The underground water generally has relatively low requirements on the mine water quality, which generally requires a simple and effective water treatment program.

The coal gangue waste resources can be deeply reused, treated and utilized. At present, coal gangue waste is another important energy industry and waste filtration in production that can be directly inverted from production and processing transformation process in the coal industry of northern China. A large part of the raw material resources are generated from the construction process of underground open-pit mining and the excavation of mine tunnels, and some physical characteristics of coal gangue mineral deterioration are studied. The physicochemical and mechanical properties of coal gangue are often changed or even quite different due to the different temporal and spatial conditions of metamorphism affected by the source, stacking, storage and time conditions of metamorphic coal for a long time.

## **2. Necessity of Strengthening the Treatment of "Three Wastes" in Coal Mines**

### **2.1 Measures to strengthen coal mine environmental supervision and management**

In order to promote the comprehensive protection of coal resources and environmental management and pollution control, we should pay attention to a set of comprehensive and effective management technical measures to promote coal environmental protection that have been developed or perfected and explored in combination with the actual situation in China, and do a good job on the practical problems related to the ecological environmental protection and pollution in the management process of coal mining enterprises in China. It is strictly required that in the future, all coal mining enterprises should increase the budgetary estimate, total design investment quota and investment construction of their new energy conservation, environmental protection, dust removal, filtration and utilization facilities, sewage treatment and reuse facilities projects in their own coal mining areas every year, and gradually strengthen the effective control of coal mine environmental pollution sources and environmental protection, In the future, relevant departments all said that they should consider using financial and economic means necessary and flexible in accordance with the law or in other ways to levy environmental taxes on existing self owned coal mining enterprises. Enterprises that produce waste or polluting waste materials through production, processing and recycling of coal mining industry can also be given preferential incentives for environmental protection, Such a policy system can ultimately produce a more powerful, effective and lasting ecological cycle and economic constraints in the policy practice system, and promote regional ecological environment protection.

### **2.2 Mine geological environment protection**

At present, the direct damage to the mining geological activities of human beings and the mining environmental ecosystem of China caused by geological disasters has already formed its serious geological environmental and geological impact damage consequences, and is likely to endanger the national ecological resource security of the people's lives, property, environment and health related to the surrounding society, which will certainly cause a very serious loss of major

disasters to the national economic security of the whole society, In recent years, the Ministry of Environmental Protection of the People's Republic of China has also been increasingly strengthening and attaching importance to the special treatment and protection of the mine environment. The goal of mine geological environment protection hazard control technology and mine geological disaster management and prevention and recovery is to take reasonable preventive measures and adopt comprehensive environmental prevention, protection and management measures and comprehensive prevention and recovery technical work measures in a certain area, Take reasonable and timely measures to control or reduce the frequency of some serious mine geological disasters and the large-scale concentration or occurrence of potential accidents that cause some important geological environmental problems to the greatest extent possible and extent, avoid or increase the hazard and degree appropriately or reduce some indirect hazard losses to mine environmental protection caused by the direct losses of serious geological disasters, Effective measures have been taken to curb the extent of vegetation damage of water and soil resources and the major natural landscape damage of natural resources caused by some typical geological and geomorphic landscape factors, so as to achieve the comprehensive, coordinated and orderly development of scientific exploration, development and management of resources and geological and mineral resources, effective use of natural resources protection planning and ecological resources and environmental protection.

## **2.3 Governance and recovery measures**

Properly regulate the slope landforms of various stopes and take necessary monitoring and other measures to prevent the recurrence of major geological disasters such as mountain slope collapse and landslide hazards during open-pit mining activities;

The open stacking operation site of waste rock and waste residue shall be flat and reasonable, and the underground aquifer shall not be polluted by ponding, so as to prevent it from causing landslide and debris flow geological disasters;

Scientifically establish a modern monitoring and reporting system platform for mine geological environment information;

Increase the restoration and utilization measures of forest vegetation such as abandoned open-air comprehensive mining area, waste dump and industrial square area, such as artificial soil covering and planting of artificial forest, grass and trees, to restore ecological forest vegetation and grassland, and better restore the forestry ecological environment.

## **Conclusion**

The investigation and assessment of mine geological environmental protection resources, as well as the recovery assessment and pollution control of mining area pollution, is a mining environmental protection system project beneficial to the country and the people. We must consciously adhere to the relevant coordination between economic and social development and development and reasonable protection of environment and resources, scientifically and reasonably handle and utilize the relevant problems of local environmental pollution caused by the "three wastes" plan of coal mine construction, so as to realize the synchronous and rapid development of economic and social construction investment and investment environmental civilization construction, and realize its economic benefits and development environmental benefits in a unified way.

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