

ENVIRONMENTAL PROBLEMS ARISING IN OPEN-PIT MINING OPERATIONS TODAY, AND THE BASIS OF THEIR REDUCTION BASED ON THE USE OF EMULSION EXPLOSIVES IN BLASTING OPERATIONS

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ABSTRACT

Mining is an important economic activity that provides important minerals and raw materials for industry. However, mining activities have negative effects on the environment, such as water and air pollution and soil degradation. These environmental problems are caused by the intensive use of chemicals, explosives and heavy machinery during the mining process. The negative impact on the environment can continue long after mining has ended.

Keywords: Mining industry, iron ore, mining equipment, explosive emulsion, drilling, economic efficiency, environmental assessment.

Mining activities, including prospecting, prospecting, construction, operation, maintenance, expansion, abandonment, decommissioning and reclamation, have a number of positive and negative, direct, and indirect impacts on social and environmental systems. can have direct and indirect effects. Exploration, construction, operation and maintenance of mines can lead to land-use change and can have negative environmental impacts, including deforestation, erosion, pollution and changes in soil profiles, pollution of local streams and wetlands and noise levels, dust and waste for example: Mine abandonment, decommissioning and repurposing can also cause significant environmental impacts such as soil and water pollution. Identify environmental problems caused by mining. An assessment of the management methods used to solve environmental problems is required. We offer the following recommendations on environmental problems arising from production and their effective solution.



Figure 1. Explosive process in the quarry, toxic substances spreading into the air.

In addition to the mines themselves, infrastructure built to support mining activities, such as roads, ports, railways, and power lines, can affect animal migration routes and increase habitat fragmentation. -there are many documented cases of environmental pollution, often caused by mine tailings. Mine tailings are materials that remain after the extraction of the economically valuable part of the material. These materials are often stored in large tailings dams to prevent environmental damage, as the waste is often radioactive, toxic, or acidic. The waste consists of valuable substances such as cyanide, mercury or arsenic used in the extraction process; therefore, modern mining programs must often focus on removing these harmful but valuable chemicals for reuse in mineral separation. In addition to increasing efficiency and reducing costs, this reduces the risk of environmental damage by reducing the toxicity of waste.

Addressing Environmental Issues Several management techniques have been developed to mitigate the negative impact of mining on the environment, such as the use of modern equipment to reduce waste and the use of non-toxic substitutes for hazardous chemicals. In addition, reclamation and reforestation measures are being taken to restore the degraded environment.

In today's advanced era, measures are being taken to improve the ecological environment in the mining sector. If the main work in mining operations is mining and transportation, we use explosives to separate the ore from the massif, there are several types of explosives, and we know relatively less environmentally harmful emulsion explosives. **Emulsion Explosives and Their Advantages** Emulsion explosives are a safer and more environmentally friendly option than conventional explosives. Emulsion explosives produce less harmful by-products, are more stable and safer to handle, transport and store. They are widely used in industry, especially in the mining industry. **Handling Emulsion Explosives for Array Blasting** The use of emulsion explosives for array blasting requires careful planning and safety procedures. The handling, storage and transportation of emulsion explosives require special training and infrastructure to reduce the risk of accidental explosion. In addition, environmental issues such as the use of appropriate methods of disposal of explosive by-products must also be considered.

As a general conclusion, we should say that the use of emulsion explosives has a lower impact on the environment than conventional explosives. However, their use can still cause environmental damage such as air pollution and soil erosion. Careful monitoring and use of appropriate environmental management practices can minimize the environmental impact of emulsion explosives.

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