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Raniganj Girls' College

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Topic of the project: Different aspects of Air, Soil, Water, Noise pollution

A Project Report

Submitted by Semester-I students (Academic Year 2021-22)

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CERTIFICATE

This is to certify that this project titled "Different aspects of Air, Soil, Water, Noise pollution" submitted by the students for the award of degree of B.A. Honours/ Program is a bonafide record of work carried out under my guidance and supervision.

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IMPACTS OF OPEN-PIT MINING ON ENVIRONMENT

Environmental impact assessment of open pit mining in iran.

Abstract :- Mining is widely regarded as having adverse effects on environment of both magnitude and diversity.

Some of these effects include erosion, formation of sink-hole, biodiversity loss and contamination of groundwater by chemical from the mining process in general and open-pit mining in particular. As such, a repeatable process to evaluate these effects primarily aims to diminish them.

This paper applies Folchi method to evaluate the impact of open-pit mining in four iranian mines that backed previous geo-environmental assessment.

Having key geologic resources, these mines are. Mouteh gold mine, Gol-e-Gohar and Chogart iron mines, and Sarcheshmeh copper mine.

The environmental components can be defined as public health and safety.

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Social relationships, use and water quality, flora and fauna hence, various impacting factors from the mining activities were estimated for each environmental component. For this purpose, each impacting factor was first given a magnitude, based solely on the range of possible scenarios.

Thereafter, a matrix of weighted factors was derived to systematically quantify and normalize the effects of each impacting factor.

The overall impact upon each individual environmental component was then calculated by summing the weighted rates. Here, Fuchi method was applied to acquired results. The present paper finally concluded that amongst four case histories in Iran, Sarcheshmeh copper mine significantly affects the environment, with critical level of air pollution there.

Keywords :- Environmen effects · Open pit mines · Fuchi's method · Gol-e-Gohar mine · Chagarat mine · Sarcheshmeh mine · Mouteh mine.

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Introduction :- The rapid growth of population along with the increased capacity of extracting natural resources around the globe has contributed in endangering the environment.

As a matter of fact, due to growing mining activities, attention to the environmental problems and controlling pollution becomes environmental problems and controlling pollution becomes unavoidable.

Environmental protection therefore, is one of the most important issues in the sustainable development of a country. Currently, there are no limitations to the capacity of mine production but it is, however, necessary to maintain a suitable condition for miners as well as the general public (Chakraborty et al. 2002; Tadesse 2000).

Mining and related industries have a long recorded history in Iran. A variety of mines exists in the country. Some of which date back several thousand years. Mining in Iran can be divided into two periods: unscientific and scientific. In this regard, the year 1847 can be regarded as a turning point from unscientific to scientific and systematic

Environmental Impacts

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Impacts include:

- aesthetics
- air quality (dust and pollutants)
- Water discharge and runoff
- Subsidence
- tailings (acidic, heavy metals)

Minimizing the impact:

- If mining will cause quality deterioration of either surface water or groundwater, remedial and treatment measures must be developed to meet discharge standards.

- The mine plan must include all the technical measures necessary to handle all environmental problems from initial data gathering to the mine closure and reclamation of the disturbed surface area.

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How can open-pit mining become more sustainable?

Mine waste can be used for landform reconstruction, vegetation covers, and road construction

Water protection should remain the highest goal

Water can be removed from tailings, leaving it as a paste, that reduces its environmental impact.

1. The environmental impact of open pit mining:

The destruction of land resources

The process of open-pit has a devastation impact on the land resources, such as overlying soil and ground vegetation was destroyed. In China, most open-pit adopts external dump mode.

The waste-dump soil covered 40-50% of total area of the open pit, at 1.5-2.5 times of mining land. Dump produced by each 1.5-2.5 times of mining land 1.0×10^4t coal occupation $0.04 hm^2$~$0.33 hm^2$ of the land, on average of $0.16 hm^2$. And covered $16300 km^2$ areas of land in 2010, occpied a large number of land resources[2]. Almost 1.4×10^6~$2.0 \times 10^6 Hm^2$ areas of land were destructive and occupied by directly mining, and increased $2 \times 10^4 Hm^2$ a year[3]. Waste rock piles mineral resources are an important material to foundation of human survival and development, plays a role on the progress of the society. Till to 2010, there are more than 74599 metal non-metal mines in China, including 8032 underground mines and 67862 open-pit, provides a strong guarantee of the national economic.

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development[1].

Though China emphasized to avoid taking western countries lag in the industrialization process of "pollution first, treatment later", but in fact we still on the same way, the environmental problems, especially the open pit mining, such as the loss of resources, air pollution, damage of landscape and ecology.

Adverse impacts of open pit mining at mine closure

Onsite environmental impacts

1. Physical - Change in landform; pit wall instability; creation of pit lakes
2. Chemical - Metals; metalloids, AMD
3. Biodiversity - Loss of vegetation and wildlife/aquatic habitats.
4. Non Aesthetics.

Flue Gas

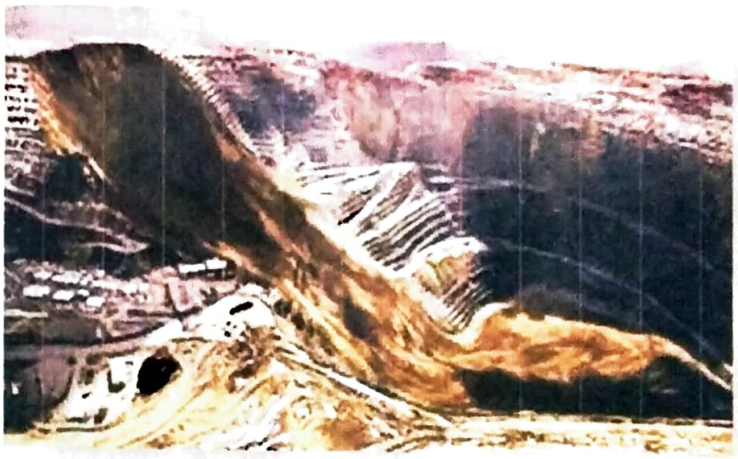
Open-Pit Mining on the Appalachian Mountains

Humans impact the physical environment in many ways :-

Overpopulation, pollution, burning fossil fuels, and deforestation. Changes like these have triggered climate change, soil erosion, poor air quality, and undrinkable water.

Mining the mountains :- For most of its route through the hardscrabble towns of West Virginia's central Appalachian highlands, U.S. Highway 60 follows riverbanks and valls. But as it approaches Gauley mountain, it swoops dramatically upward, making switchbacks over steep wooded ridges.

Heavy-Metal Runoff



Landslides caused by Open-Pit Mining

Chronic Diseases caused by Flue Gas

Environmental Effects

Mining, processing, and use of mineral resources uses large amounts of energy, causes land disturbance, and air and water pollution.

Land is scarred and the surface is disrupted; Cleanup may cost billions

Subsidence from underground mining can cause pipelines to break

Mining Wastes contain toxins, and acid drainage contaminates streams and groundwater.

Effects of Mining

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Mining is generally very destructive to the environment. It is one of the main causes of deforestation. In order to mine, trees and vegetation are cleared and burned.

With the ground completely bare, large scale mining operations use huge bulldozers and excavators to extract the metals and minerals from the soil. In order to amalgamate (cluster) the extractions, they use chemicals such as cyanide, mercury, and methyl mercury.

These chemicals go through tailings (pipes) and are often discharged into rivers, streams, bays, and oceans.

This pollution contaminates all living organisms within the body of water and ultimately the people who depend on the fish for their main source of protein and their economic livelihood.

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