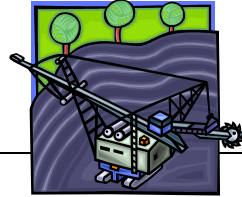


# Open Pit Mining

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Open pit mining (opposed to underground or shaft mining) is used when the deposit is close enough to the surface for mass removal of ore to be economically viable.

Large-scale open pit mining is environmentally destructive for several reasons. In addition to digging a vast crater in the earth, thereby stripping it of vital forests and ecosystems, toxic chemicals such as cyanide are often used to leach metals from the rock. This process can pollute the surrounding soil and water, and harms not only animals and aquatic life but humans as well.

Open pit mining often results in acid drainage. Rock formations rich in minerals can have high sulfur content. Sulfuric minerals are less stable when exposed to the atmosphere, and they usually react to form sulfuric acid. Acid drainage contaminates surface and ground waters and is especially problematic in a tropical climate with heavy rainfall.

## Impacts

- Destruction of vegetation
- Large volume of unused waste rock and overburden that must be stored
- Disruption of groundwater
- Production of dust and radon gas from blasts to open pit and actual mining process

## Rehabilitation

After mining finishes, the mine area must undergo rehabilitation. Waste dumps are contoured to flatten them out, to further stabilize them. If the ore contains sulfides it is usually covered with a layer of clay to prevent access of rain and oxygen from the air, which can oxidize the sulfides to produce sulfuric acid. This is then generally covered with soil, and vegetation is planted to help consolidate the material. Eventually this layer will erode, but it is generally hoped that the rate of leaching or acid will be slowed by the cover such that the environment can handle the load of acid and associated heavy metals. There are no long term studies on the success of these covers due to the relatively short time in which large scale open pit mining has existed. It may take hundreds to thousands of years for some waste dumps to become "acid neutral" and stop leaching to the environment. The dumps are usually fenced off to prevent livestock denuding them of vegetation. The open pit is then surrounded with a fence, to prevent access, and it generally eventually fills up with ground water. In arid areas it may not fill due to the deep groundwater levels.

*"The mining industry produces more solid waste than all the municipal landfills in the United States."*