ENVIRONMENT

The far reaching effects of mining

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IN ORDER to obtain many of the valuable mineral resources locked within our planet we have to dig into the earth or mine them.

Forms of mining include coal mining, mountaintop removal mining and sand mining. However, this raises many environmental issues, such as water pollution, deforestation, erosion and loss of biodiversity. Additionally, mining causes noise pollution, air pollution from all the dust it produces and visual pollution, as lush green hillsides are interrupted by large bare patches of earth. I will first look at some of the environmental issues connected with all types of mining, and then deal specifically with some types like coal mining, mountaintop removal mining and sand mining which produce particular environmental effects.

Removal of the vegetation; be it forest trees, grassland or river side vegetation, is necessary to access the subterranean material to be mined. However, a much wider area of vegetation is actually cleared for roads to facilitate transport of equipment, workers and the mined product. Land is also needed for building structures such as offices, accommodations for workers, storage facilities for the product. These additional activities lead to deforestation, destruction and disturbance of ecosystems.

Large volumes of water are produced from mine drainage, as well as water used in cooling the equipment used to drill into the substrate and when using aqueous extraction techniques for some minerals and for other mining operations. This water carries with it dissolved chemicals such as metals and heavy metals like lead and cadmium. They are released and washed into nearby rivers and streams affecting the aquatic animals and plants, and may enter the groundwater supply.

Areas used for farmland and for grazing livestock are destroyed by the methods mentioned above. If the mining takes place near to such farmland, the noise and dust produced makes it uncomfortable and unhealthy for humans and livestock to continue to remain in the area. However, after mining, the flat land produced is more useful to humans for urbanisation and for farming. It is easier to work than steep mountainsides.

Amidst the search for renewable energy resources, Coal remains a cheap source of fuel as it is available in most countries, but is fraught with its own unique environmental issues. Coal mining produces coal slurry, which is a mixture of coal dust -dissolved minerals that have been either washed or leached out of the coal and surrounding rocks. Because of the toxic nature of this water, it is contained in dams made from the rock and debris generated from mining. This again is not a foolproof method of protecting humans and biodiversity. Incidents have occurred where failure of these dams have resulted in millions of litres of this toxic mixture entering the drinking water supply killing aquatic plants and animals and causing flood damage to the surrounding areas and properties.

Mountaintop removal mining or mountaintop mining (MTM) is a form of surface mining which is performed on a summit or summit ridge of a mountain. The process involves removing 300 metres of the substrate using explosives to expose the underlying rock. It is mostly used in coal mining in the Appalachian Mountains in the eastern United States, and in Trinidad & Tobago for building material. The excess rock produced by these explosions is dumped in the valley where it is referred to as "valley fill".

Proper procedure dictates that the rock and debris removed from one area is used to fill the pit produced in the last area mined and the excess dumped in the valley. The covered pit is then graded and a mixture of grass seed, fertiliser and mulch made from recycled newspaper is spread to encourage the fast growth of vegetation cover over the area to prevent erosion and stabilize rock formations.

Unfortunately this does not always occur with cases of valley fill being placed in streams. Some of the grass species used may be non-native to the area; selected because they are fast growing. This would pose a problem for native species as they are quickly out competed for space by the non-native species. A plus side to this argument is that some of the non-native species introduced for reclamation have difficulty in establishing root systems in the compacted backfill. However, without vegetative cover the land would be useless in starting a food chain and thriving ecosystem in the area since there is no food for grazing animals and in turn no large predators migrate into the area to feed on the herbivores. So if not properly addressed the mined area remains barren of biodiversity.

Sand mining involves the removal of sand from beaches and rivers for use in the construction industry. This practice has traditionally been used in Tobago for the construction of buildings and roads, but has accelerated in from the 1980s to the present day with the development of the tourist industry. Small bays with vehicular access were the first to be destroyed such as Richmond Bay and Turtle Beach which is a nesting site for Leatherback turtles. Mining at Turtle Beach at the western part of the island has led to the erosion of the beaches in this area. Closure of mining at Turtle Beach meant mining of river sand in Goldsborough. Mining of this river is currently continuous. In addition to the vegetation cleared for mining operations, the loss of the sand and gravel leaves nothing little to support the remaining vegetation. As a result, the river banks, fall into the river and are swept downstream causing blockages and flooding. The increased sediment leads to increased turbidity of the water which prevents light from entering the water for photosynthesis of some aquatic plants. Certain animal species also do not prefer such turbid conditions.

So whether mining operations happen in our country or in another on the opposite side of the planet, what must be kept in mind is that mining is an activity in which the effects are not localised. The effects of mining done in any one area are felt kilometres away.