**DEEP SEA MINING: IS IT SAFE ENOUGH FOR THE OCEANS?**

**BY: ARUNIM KATHURIA**



Deep sea mining- what is it? Deep sea mining is a mineral retrieval process that takes place on the ocean floor. Ocean mining sites are usually around large areas of polymetallic nodules or active and extinct hydrothermal vents at 1,400 to 3,700 metres below the ocean’s surface.

Recent technological advancements have given rise to remotely operated vehicles (ROVs) to collect mineral samples from prospective mine sites. Using drills and other cutting tools, the ROVs obtain samples to be analyzed for precious materials. Research shows that polymetallic nodule fields are hotspots of abundance and diversity for a highly vulnerable abyssal fauna. Because deep sea mining is a relatively new field, the complete consequences of full- scale mining operations on this ecosystem are unknown. However, some researchers have said they believe that removal of parts of the sea floor will result in disturbances to the benthic layer, increased toxicity of the water column and sediment plumes from tailings. Removing parts of the seafloor could disturb the habitat of benthic organisms, with unknown long-term effects.

Among the impacts of deep sea mining, sediment plumes could have the greatest impact. Plumes are caused when the tailings from mining are dumped back into the ocean, creating a cloud of particles floating the water. Depending on the size of the particles and water currents the plumes could spread over vast areas. The plumes could impact zooplankton and light penetration, in turn affecting the food web of the area.

The seafloor contains an extensive array of geological features. These include abyssal plains 3,500- 6,500m below the sea surface, volcanic underwater mountains known as seamounts, hydrothermal vents with bursting water heated by volcanic activity, and deep trenches such as Mariana trench, which at almost 11,000m is the greatest depth registered in the ocean. As the deep sea remains understudied and poorly understood, there are many gaps in our understanding of its biodiversity and ecosystems. This makes it difficult to thoroughly assess the potential impacts of deep sea mining and to put in place adequate safeguards to protect the marine environment.

Based on the current knowledge of the deep sea mining, some of the impacts of mining activities could affect its biodiversity and ecosystems, such as; disturbance on the sea floor, sediment plumes, pollution. If we talk about pollution, marine animals such as whales, tuna and sharks could be affected by noise, vibrations and light pollution caused by mining equipment and surface vessels, as well as potential leaks and spills of fuel and toxic products.

A better understanding of the deep sea is necessary to guide mitigation strategies and proper enforcement of regulations in order to limit the environmental impacts of mining activities. Comprehensive baseline studies are needed to understand what species live in the deep sea, how they live, and how they could be affected by mining activities. Current technologies may not be sufficient to avoid serious and lasting harm to the environment including the loss to biodiversity. Minimizing impacts should involve, among other things, improving mining equipment to reduce seafloor disturbance.

At last, I would conclude by saying that, no doubt deep sea mining is good as well as beneficial for the seas, but we should keep in mind that our marine animals, also have their family, their lives. So in order to protect the marine animals and the other environment, we should request the department, who is the incharge of deep sea mining to make an equipment, which saves our marine animals from this situation.

Thank you!