

What is Biomining?

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About Biomining

- It is the technique of **extracting metals from ores** and other solid materials, typically **using micro-organisms** (bacteria, archae, **fungi**, or plants).
- Biomining techniques may also be **used to clean up sites** that have been **polluted with metals**.

Process:

- **Valuable metals** are commonly **bound up in solid minerals**.
- Some **microbes can oxidize** those **metals, allowing them to dissolve in water**.
- This is the basic process behind most biomining, which is **used for metals** that can be more **easily recovered when dissolved** than from solid rocks.
- **A different biomining technique**, for metals which are not dissolved by the microbes, **uses microbes to break down the surrounding minerals, making it easier to recover the metal** of interest directly **from the remaining rock**.

- **When the metal of interest is directly dissolved**, the biomining **process is called “bioleaching,”** and **when the metal of interest is made more accessible** or “enriched” in the material left behind, **it is called “biooxidation.”**

What metals are currently biomined?

- Most current biomining operations target **valuable metals like copper, uranium, nickel, and gold** that are **commonly found in sulfidic** (sulfur-bearing) **minerals.**
 - **Microbes** are especially **good at oxidizing sulfidic minerals**, converting metals like iron and copper into forms that can dissolve more easily.
 - Compared to typical mining that uses hazardous chemicals and has a large CO2 footprint, biomining represents an **environmentally friendly** alternative, **producing very little** (if at all) **hazardous waste.**
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Q1: What is an Ore?

Ore is a deposit in Earth’s crust of one or more valuable minerals. The most valuable ore deposits contain metals crucial to industry and trade, like copper, gold, and iron. Metals are often associated with particular ores. Aluminum, for example, is usually found in the ore called bauxite.

Source: **Biomining at landfills in Ghazipur, Bhalswa set to miss latest deadline**

Source: <https://vajiramandravi.com/current-affairs/biomining/>

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