

## Microbial communities in the mining water and bioremediation

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### Abstract

Acid mine drainage (AMD) is a serious environmental problem resulting from the extensive mining of sulphidic ore. The exposure of pyrite and non-pyritic sulphidic minerals to both oxygen and water results in the acidic and sulphate rich wastewater. The old mines at Slovinky in the Western Carpathians, Slovakia, demonstrate such situation. AMD communities contain fewer prokaryotic lineages than many other environments. AMD communities are characterized by a very limited number of distinct species, probably due to the small number of available metabolically beneficial reactions. To prevent the formation or the migration of the AMD from its source is generally considered to be the preferable option, although this is not feasible in many locations, and in such cases there is necessary to collect, treat, and discharge mine water. There are various options

available for the AMD remediating, which may be divided into those that use either chemical or biological mechanisms to neutralize AMD and to remove metals from the solution. The roles of algae and fungi, the natural residents of AMD and its attenuator are not emphasized adequately in the mine water research. This review examines the role of these microorganisms (bacteria, algae and fungi) and documents their activities in the holistic form in the mine water environment.

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