Studies on the Impact Due to Sulphide Mineralization and Associated Mining Activity on Trace Element Geochemistry of Groundwater Regime around Agnigundala, AP, India

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In recent times the hydro geological research has been focused on issues related to environmental pollution. Mining of mineral resources has been a major source of pollutants resulting pollution of the groundwater in the surrounding hydro geological regimes. This is especially true, when the mining is carried out for sulphide ore bodies. Because, the sulphides have tendency to natural leaching and when these ore bodies are exposed by man made excavations the leaching will be many fold. The Agnigundala mineralized belt of Andhra Pradesh has been a center of mining activity since long time. However, no systematic investigation was attempted to investigate the environmental geochemistry and impact assessment of groundwater due to the mineralized ore body and it's mining. Hence, the present investigation has been planned and carried out. The main objective of this investigation is to assess the impact of polymetalic mineralized zone at Agnigundala and the associated mining activity in the surrounding groundwater zones. It is also kept in mind to assess the impact on the basis of various geological factors such as lithology, distance from mineralized zone, geomorphology and lineament pattern.

A detailed study has been carried out on the trace element composition on the ground waters of the study area. The elements namely copper, lead, zinc and iron were selected for this purpose. The results indicate that the lithology, aquifer conditions and lineament pattern have significant influence on the distribution of these trace elements in groundwater. The villages Kondramutla, Kaucnenpalli, Bandlamottu, Srinagar and Vinukonda were established to have groundwater with exceeding limits of these trace elements. The details of this investigation are presented in this paper.

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