

## Reuse and Securing of Mining Waste : Need of the hour

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With recent advancements in technology and rising standards of living the demand for minerals has increased drastically. Increased reliance on mining industry has led to unmanageable challenges of Mining waste generated out of Mining and Quarrying activities. According to Statistics from EuroStat Mining and Quarrying generated 734 million Tons in Europe in 2012 which accounted for 29.19 % of the total waste, becoming second most important sector in terms of waste generation after Construction Industry.

Mining waste can be voluminous and/ or chemically active and can cause environmental threats like groundwater pollution due to leaching of pollutants, surface water pollution due to runoffs during rainy season, river and ocean pollution due to intentional dumping of tailings by mining companies. Most of the big mining companies have not adopted policies against dumping of tailings in rivers and oceans. Deep Sea Tailings Placement (DSTP) is creating havoc in remote and pristine environment of deep-sea beds e.g. Bismarck Sea. Furthermore, mining waste is contaminating soil in nearby areas by disturbing soil microbial activity and other physio-chemical and biological properties of soil (e.g. Barruecopardo village - Spain). Mining waste stored in heaps and dams has led to many accidents and on an average, worldwide, there is one major accident in a year involving tailings dams (e.g. Myanmar, Brazil, 2015). Pollution due to tailings is causing local residents to relocate and become 'ecological migrants'.

The above issues linked to mining waste makes reuse and securing of mining waste one of the urgent challenge to deal with. The studies done previously on mining show that most of the researches linked with mining waste reuse and securing are very site specific. For instance, the type of recovery method should not only provide environmental clean-up but also economic benefits to promise sustainability of the method. Environmental risk assessment of using mining waste as agricultural soils can depend on Bio-accumulation factor, Translocation factor of heavy metals, species of plant grown and type of the natural biota of the surroundings and effect of different exposure routes. This also leads to the fact that more research is required in this area.

Accordingly the same problem statement was chosen as part of a PhD research Project. The PhD research is part of REMEDIATE project (A Marie Sklodowska-Curie Action Initial Training Network for Improved decision making in contaminated land site investigation and risk assessment, Grant Agreement No. 643087).

In this project the researcher will select a mining site in Italy to find possible solutions to the environmental impact of mining waste collected there. The project will focus on 1) physical and chemical characterization of waste 2) environmental risk assessment study of the mining waste 3) impact of mining waste on water bodies and soil 4) to discover possible routes of reuse and recovery of minerals from the waste. Thus project focuses on environmental sustainability of mining waste reuse and clean up.

Keywords : Mining waste ; environmental risk assessment ; reuse and recovery.