



Groundwater pollution of post-mined phosphate rock in Tuojiang watershed (Sichuan, China)

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Abstract:

Phosphate rock is the source of phosphorus used to make phosphatic fertilizers, essential for growing the food needed by humans in the world today and in the future. The erosion and eluviation on exposed phosphrite layer and overburden in the phosphate rock areas result in the releasing of fluoride and phosphorus and groundwater polluting. Meanwhile, the waste water and untreated mineral waste residue in the beneficiation and mining operations are also main source of pollution.

The un-restored post-mined phosphate rock areas in Tuojiang watershed is large scale. The investigation of the amounts of pollutants releasing from mined lands and transporting by runoffs was conducted. The releasing and transporting amounts of pollutants were calculated according to the results of column leaching studies and areages of exposed phosphrite layers and overburdens.

In conclusion, phosphorus mining activity is an important non-point source of groundwater contamination of Tuojiang watershed. Study about the management and engineering measurement can be carried out according to the non-point source: agriculture, Pollution, Phosphorous mine and chemical plant. The study can provide the practical consultation and help making the decision about the management and treatment of groundwater resource in Tuojiang watershed.

Keywords: Tuojiang watershed; Groundwater pollution; Losing process; Fluorine; Phosphorus