

## The Investigation of Enzymatic Activity in the Soils Under the Impact of Metallurgical Industrial Activity in Lori Marz, Armenia

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**Abstract :** Beta-glucosidase, chitinase, leucine-aminopeptidase, acid phosphomonoestearse and acetate-esterase enzyme activities in the soils under the impact of metallurgical industrial activity in Lori marz (district) were investigated. The results of the study showed that the activities of the investigated enzymes in the soils decreased with increasing distance from the Shamlugh copper mine, the Chochkan tailings storage facility and the ore transportation road. Statistical analysis revealed that the activities of the enzymes were positively correlated (significant) to each other according to the observation sites which indicated that enzyme activities were affected by the same anthropogenic factor. The investigations showed that the soils were polluted with heavy metals (Cu, Pb, As, Co, Ni, Zn) due to copper mining activity in this territory. The results of Pearson correlation analysis revealed a significant negative correlation between heavy metal pollution degree (Nemerow integrated pollution index) and soil enzyme activity. All of this indicated that copper mining activity in this territory causing the heavy metal pollution of the soils resulted in the inhabitation of the activities of the enzymes which are considered as biological catalysts to decompose organic materials and facilitate the cycling of nutrients.

**Keywords :** Armenia, metallurgical industrial activity, heavy metal pollution, soil enzyme activity

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