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Biochar effect on biodegradation of free cyanide by bacterial species isolated from cyanide contaminated artisanal gold mining catchment area in Burkina

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Artisanal small scale gold mining (ASGM) in Burkina Faso has contributed to the economical and societal development of this country, in spite of its unlawful characteristics. Nevertheless, rudimentary tools and technics were used in ASGM activity that induces a highly environmental degradation throughout the inappropriate aspect of the activity and the use of the hazardous chemical compounds as cyanide. In precedent study, the presence of cyanide degrading bacteria (CDB) in polluted soil and water samples were confirmed and isolated in a selective medium in the laboratory scale. The isolated CDB species had degraded 99% of the CNL within 24 hours with bacterial growth and ammonium production (Razanmahandry et al 2016). But the pollution in the ASGM area still increases (Razanmahandry et al 2018). On the other hand, many studies have shown that microbial biomass in most cases increases in the presence of Biochar (Lehman et al 2011). In this part we aim to study the effect of Biochar on CDB and cyanide biodegradation. Biochar produced from Balanites pyrolised in improved focus on Burkina Faso were characterized and investigated as adsorbents for the removal of cyanide from aqueous solution. The adsorption data were well described by a Langmuir isotherm, with maximum adsorption capacities of 109 mg/g and cyanide removal about 85%. Using CDB and Biochar shown that cyanide removal is about 99% in 20 hours (24 hours without Biochar) with bacterial growth more important than test without Biochar.