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Influence of potassium hydroxide activation on characteristics and environmental risk of heavy metals in chars derived from municipal sewage sludge

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ABSTRACT:

To investigate the influence of KOH activation on characteristics and environmental risk of heavy metals in chars, sludge was pyrolyzed with varying amount of KOH. The analyzation of characteristics and potential ecological risk evaluation of heavy metals were conducted by surface area analyzer, FTIR, XRD and BCR sequential extraction. The activated chars have higher surface area and lower content of silica compared to those without being activated. The activation of KOH promoted residual fraction of Cd, meanwhile, Zinc, Cr, Ni and Mn were converted to relatively unstable fractions (F2 and F3). The results of risk assessment indicated that the potential ecological risk level of Cd was reduced in activated chars, while risk level of Zn, Cr, Ni and Mn were increased after pyrolysis with KOH activation. The potential ecological