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**RADIOACTIVITY IN PHOSPHOGYPSUM AND THE
RECOVERY OF SODIC SOILS OF BRAZILIAN SEMI ARID
ENVIRONMENT**

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The salinity in soil at the Brazilian semi arid environment is an usual problem caused by incorrect agricultural practices, allied to local climate and soil conditions. The use of phosphogypsum (PG) to recover these soils is still a concern once this material has natural radionuclides on its composition. An experiment was conducted to study the employment of phosphogypsum on reducing the salinity in two major soils from the Brazilian semi arid region. The radionuclides content in phosphogypsum samples were previously analyzed with a gamma spectrometry equipment. Three doses of phosphogypsum were mixed with top soils samples in greenhouse conditions and after a reaction time and controlled irrigation the samples soil:phosphogypsum were submitted to single extractions based on Tessier et al. sequential extraction method. Ra isotopes and ²¹⁰Pb in the extraction fractions were analyzed by alpha and beta counting. The major content of Ra isotopes and ²¹⁰Pb were bounded to the residual fraction, followed by exchangeable fraction, due to the small levels of carbonates, organic matter and iron and manganese oxides. The use of the studied phosphogypsum did not contribute to enhance the ²²⁶Ra activity concentration on the soils analyzed and the levels of this radionuclide on the PG were lower than the recommended by USEPA to allow the PG use on agricultural soils, but may contribute on ²²⁸Ra and ²¹⁰Pb, after 30 days of addition, on the exchangeable fraction. The phosphogypsum promoted a satisfactory reduction of electrical conductivity on the studied soils and indicate the possibility of reclamation of these soils.