

# **ON THE ENVIRONMENTAL IMPACT OF PHOSPHATE FERTILIZER INDUSTRY INFERRED BY LICHENS**

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The phosphate fertilizer industry, located in Cubatão (São Paulo State, Brazil), is responsible for the production of \_\_\_Mton  $y^{-1}$  of  $P_2O_5$ , generating 69 Mton  $y^{-1}$  of a residue, known as phosphogypsum. The raw material used is the phosphate rock, which is mainly transported to the industrial complex by railway line. The phosphate rock and phosphogypsum present in their composition, natural radionuclides of the U and Th decay series, as well as rare earth elements (REEs). This paper aims to measure the content of these elements in lichens collected around the phosphate fertilizer industry. The radionuclides  $^{226}Ra$ ,  $^{228}Ra$  and  $^{210}Pb$  in lichen samples were measured by alpha and beta counting after radiochemical separation and U, Th and REEs were determined by neutron activation analysis. The results showed that the lichen present the same fingerprint as the phosphate rock and phosphogypsum. The cluster analysis of the obtained data showed that the lichen samples collected near to the railway line are more enriched in all the elements studied.