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COBALT ADSORPTION IN KAOLINITEE.S. Souza^a and P.S.C. Silva^a eliel.souza1@hotmail.com

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The adsorption process has been used as an efficient method for the removal of metallic ions from effluents. In this work, it is presented the studies to evaluate the adsorption capacity of Co in kaolinite, a low cost adsorbent, aiming at the removal of this ion from aqueous solutions. The specific surface area (S) was analyzed in 25 samples prepared in different ways: kaolinite, bentonite and activated carbon and, mixtures of kaolinite-bentonite and kaolinite-activated carbon. These mixtures were prepared by adding to kaolinite 10, 20, 30, 40 or 50% of activated charcoal or bentonite. Samples of kaolinite-activated charcoal mixture and raw kaolinite were also calcined at 600 and 1000°C for 4h. The adsorption parameters investigated for these adsorbents were: contact time, pH, solute initial concentration, ionic competition and ionic strength. It was found that the optimized contact time and pH, for the purpose of this work, were 30 min and pH 6. Under these conditions the cobalt ion removal efficiency was greater than 80%. It was verified that the presence of Cr and Zn ions, as well as the increase in ionic strength caused a decrease in the adsorption capacity of Co in the adsorbent mixture. The Langmuir and Freundlich isotherms presented R² equal to 0.906 and 0.597, respectively. The parameters determined by these isotherms indicated a spontaneous process, i.e., energetically favorable, for the adsorption of Co under the conditions that this work was carried out.

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CHEMICAL CHARACTERIZATION OF THE CLAY DEPOSIT KNOWN AS PERUVIAN BLACK MUDI.C. Alves^a, P.F.M. Gouvêa and P.S.C. Silva^a isiscalves001@gmail.com

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In Peruíbe city, state of São Paulo, the largest continuous natural deposit of clay in the world can be found, containing of a material popularly known as Peruíbe Black Mud (PBM). This deposit has 83 thousand tons with a depth of 75m, distributed in 5 hectares, making the municipality a tourist point. This sludge is characterized by large amounts of fine particles, high organic matter content, high sulfite reducing bacteria content and a consequent high ion reduction potential; it is used in psoriasis, peripheral dermatitis, acne and seborrhea treatments, as well as in myalgias, arthritis and non-rheumatic joint processes. Ten samples of the in natura mud were collected along the deposit, in depth ranging from 1 to 1.5m and also 6 samples that were matured with see water, with the objective of verifying the homogeneity of the chemical composition through the evaluation of its elemental content, for the physical-chemical characterization, measurements of pH, moisture, organic matter and loss on ignition were made. The elemental concentrations were determined by

neutron activation analysis. In these measurements approximately 100mg of sample were irradiated together with certified reference materials, for a period of 8 hours under a neutron flux in the order of $10^{12} \text{ n cm}^{-2} \text{ s}^{-1}$. The activities were determined by gamma spectrometry using high-purity Ge detectors. Both, in natura and matured samples presented similar coefficient of variation for most of the elements, with Ca, Co, Cr, Cs, Fe, La, Th and U having a coefficient of variation lower than 30%, the elements As, Sm, Tb, Zn and Zr presented a coefficient of variation between 30 and 60% and the elements K, Nd, Sb, Se, Tb and Yb presented the highest coefficients of variation, above 60%.

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BENTONITE MATURATION WITH "ÁGUAS DE LINDÓIA" WATER (SP) P33

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In the therapeutic treatments involving clays, they are used in mud form also called peloids and are obtained by maturation process. Peloid is a natural product consisting of a mixture of solid phase (inorganic and organic materials) with a liquid phase (mineral medicinal, salt lake or sea water). The maturation process occurs during the interaction of the solid and liquid phases that can vary up to many months. The peloids can be applied to different parts of the body or on the whole body by means of masks and poultices, or even by bathing the body partially or totally, for therapeutic or cosmetic purposes. This study proposes to characterize the elemental composition of the peloids artificially obtained by the maturation process of mixing bentonite with mineral medicinal water from Águas de Lindóia (SP). For this procedure, bentonite samples were left in contact with running water for three months, after this, they were collected, dried, transferred to a mortar, crushed and irradiated in the IEA-R1 reactor at IPEN, together with certified reference materials, to be analyzed by neutron activation analysis. The irradiation occurs at a neutron flux of $10^{12} \text{ cm}^{-2} \text{ s}^{-1}$, during 8 hours and the induced activity were measured by gamma spectrometry.

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