

P85

RARE EARTH ELEMENTS, U AND Th IN TUNNEL DUSTS OF SÃO PAULO CITY, BRAZILR.M. Nory^a and A.M.G. Figueiredo^a remenry@usp.br

Nuclear and Energy Research Institute, São Paulo, Brazil

São Paulo is one of the most populated cities in the world, with about 20 million inhabitants in its metropolitan area, more than 7 million motor vehicles and intense industrial activity. Given its importance as a major urban center in South America and the lack of information concerning urban dust composition, the present study aimed to determine rare earth elements (REEs), U and Th mass fractions in tunnel dust, collected in the Jânio Quadros Tunnel, and to assess their possible sources. The study of REEs distribution in urban environments has become of interest over the last decades, due to the increasing industrial use of these elements. The REEs, that are as common as the most familiar metals, are found in metallurgical additives, fluid cracking catalysts and automobile converter catalysts, among other applications. In this study, which employed Instrumental Neutron Activation Analysis (INAA) as analytical technique, the mass fractions of eight REEs were determined and normalized to the chondrite concentration values. The results showed that major concentrations were found for light REEs, following the sequence Ce > La > Nd > Sm > Yb > Eu > Tb > Lu. The pattern of the results pointed to a natural origin for these elements. Regarding U and Th concentrations, the results varied between 1.0 – 9.4 $\mu\text{g g}^{-1}$ and 3.3 – 35.9 $\mu\text{g g}^{-1}$, respectively. Since there is almost no information about the concentration of these elements in this kind of matrix in São Paulo city, these data are important to support further investigations

This work will be presented at the International Nuclear Atomic Conference INAC 2017 (poster)

P86

A STUDY ON TRACE ELEMENT CONTAMINATION IN THE METROPOLITAN REGION OF SÃO PAULO (SÃO PAULO, BRAZIL), USING THE LIVERS OF GREAT EGRET (ARDEA ALBA) AS A BIONDICATORR.C.A. Silva^{a,1}, M. Saiki¹, E.G. Moreira¹, P.T. Meira² and S. Oliveira²^a rcasilva@gmail.com¹Nuclear and Energy Research Institute, São Paulo, Brazil²São Carlos School of Engineering of the University of São Paulo, Brazil

Hérons and egrets are considered bioindicators suitable for the assessment of environmental contamination, since they occupy the top of the food chain, and tend to accumulate high concentrations of toxic elements in their tissues. So, in this study the livers of the great egret (*Ardea alba*) were used as a bioindicators of changes in trace element concentrations between 2006 and 2011 (6 years) in the aquatic environments of the Metropolitan Region of São Paulo (SPMR). The levels

of trace elements found in livers of males and females were also compared. The method of Neutron Activation Analysis (NAA) was used in these analyses for the determination of Br, Co, Cs, Fe, K, Mg, Mn, Na, Rb, Se and Zn, and Atomic Absorption Spectrometry Method (AAS) for the determination of Cd and Hg in liver samples. In previous studies, elevated concentrations of trace elements such as Cu, Fe, Hg, Mn and Zn were found in livers. In addition to the previous published data, the results for six trace elements (Co, Cs, Fe, Rb, Se and Zn) of five liver samples collected during 2011 were included. The concentrations of Br, Co, Fe, K, Mg, Na and Se found in livers in 2011 remained at similar levels to those obtained in 2006. However, increase in levels of Cd, Cu, Hg, Mn and Zn in 2011 was obtained, probably related to an increase in environmental depositions from anthropogenic sources. Female egrets presented lower levels of Co, Cs, Se and Zn than males. Selenium requires great attention due the differences indicating possible transference to the eggs and Se can be toxic for embryos. Results obtained in this study suggests a continuous monitoring using great egret livers in order to improve the knowledge of temporal trends of contamination in aquatic environments of the SPMR.

TRACE ELEMENTS DETERMINED IN SEDIMENT CORES FROM NHECOLÂNDIA PANTANAL BY INAA

P88

S.R. Damatto^a and L.F. Santos

^a damatto@ipen.br

Nuclear and Energy Research Institute, São Paulo, Brazil

Pantanal wetland is the world's largest wetland, with an estimated area of about 200 000 km². This region is an alluvial plain and the Paraguay River and his tributaries run through the wetland due to the low declivity of the plain in the north-south and east-west direction; the water takes almost four months to cross the wetland, forming different ecosystems, such as floodplains, lakes of fresh or saline water, rivers, and others. In the last decades, this area has been affected by human activities, without the suitable planning. The sediment of an aqueous system represents a great source of study, as it is a deposit of solid material, formed by the wind, ice, or water on the surface of the earth and the deposition of organic material from animals that live there. From the sediment chemical analysis in combination with geochemical tools is possible to estimate a probable source of the elements chemistry, whether natural or anthropogenic. Trace elements from different sources tend to accumulate in the sediment fine fraction (silt + clay), and are commonly mobile, what could generate a transference of some metals to the environment. Therefore, the present work analyzed the fine (silt + clay) and the coarse (medium sand + fine sand) fraction of the sediment cores collected in four Salinas from Nhecolândia Pantanal performing the elementary chemical characterization of these sediment fractions and verify a possible historical impact by anthropogenic sources and also to verify if some element could accumulate in the sand fraction since the sediments from these ponds have a high percentage of the coarse (sand) fraction; instrumental neutron activation analysis technique (INAA) was used in the determination. Four sediment cores were