MULTIELEMENTAL DETERMINATION BY INSTRUMENTAL NEUTRON ACTIVATION ANALYSIS AND SEDIMENTATION RATES OF THE RESERVOIR RIO GRANDE

Déborah I.T. Fávaro[1], Sandra R. D. Moreira[2], Vanessa A. Campos[1], Barbara Mazzilli[2], Fernando Campagnolli[3].
1 - defavaro@curiango.ipen.br - Supervisão de Radioquímica - IPEN - Caixa Postal 11049 - 05422-970 - São Paulo
2 - damatto@net.ipen.br , mazzilli@net.ipen.br - Departamento de Radioproteção Ambiental - IPEN - Caixa Postal 11049 - 05422-970 - São Paulo
3 campagno@ipt.br Agrupamento de Geologia Aplicada ao Meio Ambiente - Divisão de Geologia - IPT - Caixa Postal 0141 - 01064-970 -São Paulo

RESUMO

The Rio Grande reservoir is located in the Southeast portion of the Metropolitan Area of São Paulo. This reservoir is responsible for the water supply of four counties (São Bernardo do Campo, São Caetano do Sul, Santo André and Diadema) and has been seriously affected by the urban expansion of the Metropolitan Area of São Paulo, mainly due to the chaotic urban occupation, with irregular use of the land. As a consequence of the soil degradation, an expressive amount of sediments has been loading the reservoir since the beginning of its operation in 1935.

In order to evaluate the sedimentation rate and verify whether the sediments contained a historical registration of the antropic activity, one sediment core was sampled with a Piston Corer inside the reservoir.

The samples of this core were analyzed by the neutron activation analysis. The elements As, Ba, Br, Co, Cr, Cs, Fe, Hg, Na, Rb, Sb, Sc, Se, Ta, Th, U, Zn and rare earth Ce, Eu, La, Lu, Nd, Sm, Tb and Yb were determined. A great variation of the concentration according to the depth was observed for Cr, Fe, Hg, Zn, As, Br, Co, Cs and Th. For the other elements an accentuated variation was not verified.

The sedimentation rates were determined by the ^{210}Pb method and ranged from 3 to 12mm/y. Lower rates were related to the period prior to the water dam, when the loading of the sediments was stabilized. Higher rates were related to rainy seasons and the urban expansion surroundings of the reservoir.

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