

PAH bioaccumulation and typology in marine sponges – potential for biomonitoring oil and combustion residues

^aFontes K T, ^aBatista D, ^aNudi A, ^aScofield A, ^aSette C, ^aFlorian N, ^aWagener A

Differently from mussels, marine sponges can be found at several water depths in the marine environment and due to its high filtering capacity may accumulate substances dispersed in seawater. The increasing in offshore oil exploration implies risk to marine life therefore it is desirable to identify suitable bioindicators for oil components and in special for PAH due to their toxicity. The goal of the present work was to validate the efficiency of *Hymeniacidon heliophila* as bioaccumulator of PAH and to characterize the PAH typology in comparison with the mussel *Perna perna*. For this 33 PAH (parental and alkylated homologs) were determined in seawater samples and in tissues of sponges and mussels sampled from several stations of different contamination levels in the coastal area of Rio de Janeiro, Brazil. PAH were evaluated in single individuals (11 from each observed station) as well as in pool of tissue from several sponges. The variability of Total PAH among individual sponges ranged from 16 to 47% and is independent of lipid content or sponge volume (size). Although sponges and mussels sampled from the same site were equally efficient in PAH accumulation, in the sponges a pref-

erence to retain 5-6 ring PAH was observed. This is possibly due to the ability of sponges to retain particles which are smaller than 1 μm , typically derived from fossil fuel combustion and therefore enriched in the high molecular mass PAH. In respect to the PAH typology in water and in sponges the later also show increment of pyrolytic compounds. In spite of this Total PAH concentration in the sponges is proportional to the contamination level in the sampled sites. The ubiquity of the species and the bioaccumulation pattern are typical of an organism suitable to successfully monitor the presence of PAH in seawater.

^a Departamento de Química, Pontifícia Universidade Católica do Rio de Janeiro, 22453-900 Rio de Janeiro, Brazil (angela@puc-rio.br)