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OPTIMIZATION OF PASSIVE SAMPLING WITH THERMAL DESORPTION FOR BTEX SAMPLES: CASE STUDY IN THE PORT OF PARANAGUÁ

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RESUMO: Air pollution due to ship emissions are mainly due to the use of motors to supply auxiliary device and involves emissions of compounds such as sulfur dioxide (SO2), nitrogen dioxide (NO2), particulate matter, and volatile organic compounds (VOCs). In addition, the European Union (EU) legislation requires the use of cleaner fuel in terms of sulfur content for stays longer than 2 ppm. Volatile Organic Compounds (VOCs) play an important role in atmospheric chemistry. This is especially true for substituted aromatic VOCs, such as toluene and xylenes, which have a high potential for photochemical ozone generation. They participate in photochemical reactions and are the main sources of radicals that can oxidize NO to NO2: the ozone precursor. The regulation of the main indicators of air pollution (ozone, nitrogen dioxide and sulfur dioxide) has been updated in recent years to include additional compounds such as benzene. Atmospheric BTEX is highly reactive, although the presence of BTEX in the upper atmosphere has a very low concentration, they can influence the natural photochemical balance, such as the formation of additional organic aerosols, as well as photo oxidants. Therefore, BTEX measurements in the upper atmosphere are of great importance. Exposure to benzene has the potential for adverse health effects, as it is a genotoxic carcinogen, within the highly toxic VOC include the BTEX. The objective of this work is to validate both the sampling and the analytical techniques for the determination of Benzene, Toluene, Ethylbenzene, and p-xylene (BTEX) in the air. The samples will be collected by a passive sampler, the desorption of the analyte will be done by means of thermal desorption technique and by gas chromatography analysis coupled to a mass detector, from which will be made carry out a case study in the port of Paranagua, so that the BTEX sampling phase is validated, as well as the thermal desorption methodology for the extraction of these compounds in the laboratory.

Key-words: Passive. Validation. Thermaldesorption. BTEX. Port.

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