2704404

Pb ISOTOPIC CHARACTERIZATION OF FUELS: IMPLICATION FOR THE ATMOSPHERIC POLLUTION OF THE SÃO PAULO CITY, BRAZIL

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The isotopic signatures of atmospheric aerosols and possible pollutants are an important tool to identify the sources of pollution and understand their dynamics and transport, especially in megacities where the number of sources is expressive. Leaded gasoline was largely used in the past and Pb isotopic compositions helped to demonstrate its contamination worldwide. Even after leaded gasoline phase-out, Pb isotopic ratios are still important to trace the fuel´s contribution to atmospheric pollution. This work presents Pb isotopic compositions determined in some fuels (common gasoline, addictive gasoline, alcohol and diesel) sampled at 2013 in two different gas stations in São Paulo city, and compares the results with those available in the literature (Aily, 2001; Gioia et al., 2005). Common gasoline has $^{206}Pb/^{207}Pb$ compositions between 1.156 and 1.185 while additive gasoline compositions range from 1.156 to 1.159. Alcohol samples show $^{206}Pb/^{207}Pb$ ratios between 1.059 and 1.149, and diesel has $^{206}Pb/^{207}Pb$ compositions between 1.131 and 1.182. The comparison of our data with those fuels previously analyzed show some variation on the Pb compositions: additive gasoline varied from 1.192 (2001) to 1.171 (2005), alcohol range between 1.145 and 1.151, and diesel between 1.157 and 1.182. With the exception of alcohol samples, all the other fuels show a large variation on the Pb isotopic compositions, indicating that gas stations provide fuels with different isotopic signatures, spreading out the interval of each material. Our data show the importance of the constant isotopic characterization of fuels, especially in the same period of aerosol evaluation, due to the large variation on the isotopic compositions observed on these samples with time.