TITLE: ***Current atmospheric emissons of the combustion of the diesel: Aldehydes and PAHs.***

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ABSTRACT

In this work, we determined the concentrations of i) 21 carbonyl compounds (cc) in the atmospheric air – formaldehyde, acetaldehyde, acetone, acrolein, propanal, butanal, butanone, crotonaldehyde, isobutenal, benzaldehyde, isopentanal, pentanal, o-tolualdehyde, m-tolualdehyde, p-tolualdehyde, hexanal, 2,5-dimethybenzaldehyde, heptanal, octanal, ethylhexanone and decanal; ii) suspended particles in different sizes using the impactors Sioutas, NanoMOUDI, PM10 low-vol and the PM2,5 cyclones; 16 PAHs – naphthalene, acenaphthene, acenaphtylene, fluoranthene, phenanthrene, anthracene, fluorene, pyrene (PYR), benzo[a]anthracene (BAA), chrysene (CRY), benzo[b]fluoranthene (BBF), benzo[k]fluorantene (BKF) benzo[a]pyrene (BAP), dibenz[ah]anthracene (DBA), benzo[ghi]perylene and indene[1,2,3-cd]pyrene (IND) - associated the suspended particles collected by the impactor Sioutas; all current of the combustion of the diesel/biodieseil in the central terminal of urban bus of Londrina in the period from July 3 on 24, 2008. 14 daily (24 hour of collection) samples of cc were collected using cartridges Sep-pak C18 impregnated with 2,4-DNPH. Later the cc were extracted using acetonitrile, being their certain concentrations for High performance liquid chromatography (HPLC). The medium concentration obtained for the total cc was 12,76±2,19 ppbv. The largest found concentrations went to acetaldehyde (medium concentration 6,90 ppbv), formaldehyde (2,53 ppbv) and acetone (1,14 ppbv). In the analyses gravimetrys, 12 daily samples were collected using the impactor Sioutas, composed by 4 impactors fragmentation and a powders filte. The variation in the concentration of PM was from 2,1 to 34,1 µg m-3, the total medium obtained concentration was 49,6 µg m-3. The material particulate obtained like this was extracted with acetonitrile and it was verified the emission and distribution by size of PAHs in PM. Of 16 investigated PAHs, acenaphthylene was not detected for the used technique. The compositions PYR, BAA, CRY, BBF, BKF, BAP, DBA, BGP and IND were found associates the different fractions PM with the respective medium concentrations 0,024±0,066, 0,039±0,062, 0,049±0,063, 0,043±0,057, 0,012±0,019, 0,022±0,036, 0,071±0,148, 0,014±0,030 and 0,057±0,104 ng m-3. As the distribution for size, the compositions BBF, BKF, BAP, IND

and BGP were found predominantly likely in the fine particles and the compositions BAA, CRY and DBA in the fine and thick particles. They were also collected 3 samples of PM using the impactor Sioutas with 168 hours of collection, the concentrations obtained in these conditions were equivalent found them in 24 hours. Three samples were collected using the impactor NanoMOUDI, the total medium obtained concentration was of 44,0 µg m-3. They were obtained 19 samples of PM2,5 and PM10 with medium concentrations of 16,4±7,6 µg m-3 and 58,9±20,6 µg m-3, respectively. It was obtained like this, the profile of emission of the compositions investigated coming of the it burns of B3 in atmosphere with little circulation of air.

Key words: Biodiesel. PAHs. Carbonyl Compounds. Particulate matter. distribution for size.