PRE-MONITORING AND ANALYSIS OF POLYCYCLIC AROMATIC HYDROCARBONS IN $PM_{2.5}$ AMBIENT AIR AROUND NORTHERN BORDER OF THAILAND

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Abstract - Fine particles ($PM_{2.5}$) were collected by Mini Volume Portable Air Sampler at a flow rate of 5 L/min within twenty-four-hour in ambient air during February to May 2015 in 3 study sites locating close to the border of Thailand and Myanmar including Mae Sai station (MS1), Mae Sariang station (MS2) and Mae Sot station (MS3). The aims of this study are pre monitoring of $PM_{2.5}$airborne and determination of 16 PAHs. The average and range of $PM_{2.5}$concentrations were 64.35 and 9.72 - 164.35 µg/m^3, respectively. While, the highest levels of $PM_{2.5}$were in March and lowest in May at all sampling sites. In addition, $PM_{2.5}$concentrations of MS1 and MS2 were higher than the Thailand National Ambient Air Quality Standard (NAAQS) with 50 µg/m^{3}in 4 samplingdays whilst MS3 was higher than NAAQS in 2 sampling days. Moreover, this sampling period is in dry season and probably due to open burning activities in each site. This study found Σ16PAHs range 1.16 – 12.41 µg/m^3 and the descending order of mean of PAHs compound (ng/m^3) were 0.37 ± 0.55 at MS1, 34 ± 0.49 at MS3 and 0.30 ± 0.34 at MS2. Major of PAHs compound were Benzo[g,h,i]perylene (BghiP), Benzo[b]fluoranthene (BbF) and Indeno[1,2,3-c,d]pyrene (IDP) at all sites. Furthermore, BghiP, IDP and Dibenz(a,h)anthracene (DahA) were suggested to be the tracers of vehicle exhaust whilst BbF, Benzo(k)fluoranthene (BkF) and Chrysene (CHR) have been identified from biomass burning.

Keywords - PM2.5, PAHs, Ambient Air, Northern Border of Thailand