

## Spatial and temporal variations of ambient PM<sub>10</sub>-bound polycyclic aromatic hydrocarbons in Chiang Mai and Lamphun Provinces, Thailand

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### ABSTRACT

Respirable airborne particulate matters (PM<sub>10</sub>) were collected using high volume air samplers for 24 h every three days from four sampling stations in Chiang Mai and Lamphun Provinces, Thailand. The maximum PM<sub>10</sub> concentration for each sampling station ranged from 140 to 182 µg/m<sup>3</sup>. PM<sub>10</sub>-bound polycyclic aromatic hydrocarbons (PAHs) were extracted from quartz fiber filters and analysed by gas chromatography-mass spectrometry (GC-MS). Mean concentration of total PAHs was in a range from 1.7 to 12.2 ng/m<sup>3</sup>. Ratio of non-carcinogenic and carcinogenic PAHs found was approximately 1:3 or 1:4 depending on sampling sites. Concentrations of most of carcinogenic PAHs were found to be positively correlated to PM<sub>10</sub> concentrations. Seasonal variation of PM<sub>10</sub>-bound PAHs was obviously seen in all sites. The highest concentration was found in dry season (December–March). Spatial variation was observed in one sampling site, where PAHs content was significantly higher than other sites. Apart from traffic congestion, this was probably due to specific local activities i.e. biomass burning.

*Keywords:* Air pollution; Biomass burning; GC-MS; PAHs; PM<sub>10</sub>

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