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DAUNGKAMOL CHAOSRIMUD: INVESTIGATION ON CHEMICAL
COMPOSITIONS OF AIR PARTICULATE SAMPLES, COLLECTED DURING
INDONESIA FOREST FIRE 1997: WARET VEERASAI, Dr.rer.nat., SURAPONG
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The forest fires from Kalimantan and Sumatra, Indonesia introduced a large scale impact of haze over the southern part of Thailand in the second half of 1997. Many different harmful substances such as gases, organic compounds and air particulate matter including metals in air particulate were emitted.

Sixty samples of air particulate matter samples, collected during the phenomenon from Had-Yai and Trang stations in Thailand and seven samples from Samarinda in Indonesia were provided by Pollution Control Department, Thailand, and School of Applied Sciences Monash University, Australia, respectively.

The research interest was to explore the nature and chemical compositions of air particulate matter using many techniques in both qualitative and quantitative manners. EDXRF was the first technique for qualitative analysis because it is a less time consuming and non-destructive technique. In this research, several matrix corrections XRF were attempted for semi-quantitative analysis. SEM x-ray microanalysis is a technique for microstructure and chemical composition determination. Source and type of particle could be indicated. ICP-AES, ICP-MS and VA, including DPV, DPASV and DPAdCSV were used for quantitative analysis. ICP-AES is sequential and ICP-MS is simultaneous, while VA is capable of both. The interference for ICP-AES is less than that for ICP-MS and VA, but the detection limit is higher. The concentrations of Ni, Co, Cu, Mn, Mg, Fe, Cr, Pb, As, Sn, Zn, Sb, Cd were investigated. Zn, Mn, Fe, Cu, Mg and Pb could be detected in most samples but the concentrations of these elements were at low level. Ni, Co and Cd concentrations were lower than the detection limit. The uncertainty results with high SD values were found for As, Sn, Sb and Cr, which were caused by contaminants in the sampling step or homogeneity of samples. The comparison of Zn concentration from ICP-AES, ICP-MS and VA techniques by using ANOVA illustrated that these results were not significantly different. The linear regression correlation of results from ICP-AES and ICP-MS was applied for Zn, Fe and Mn. The teflon coated filter was recommended as a suitable filter for trace element analysis for future study.