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• 中文關鍵字	多環芳香烴化合物；肺癌；去氧核糖核酸鍵結物；致癌性		
• 英文關鍵字	Polycyclic aromatic hydrocarbons (PAHs)；Lung cancer；DNA adduct；Carcinogenicity；Cyclopenta[cd]pyrene		
• 中文摘要	流行病學研究顯示空氣污染較嚴重地區居民之肺癌死亡率及發生率較高。台灣都會區主要空氣污染包括機車排放廢氣。其中所含之多環芳香碳烴(Polycyclic aromatic hydrocarbons, PAHs)，如 Benzo[a]pyrene (B[a]P)、Cyclopenta[cd]pyrene (CPP)等均具致癌性，其總量亦遠超過其他國家。因此，了解 PAH 與肺癌發生間的關聯性，應視爲台灣環境醫學上之一主要課題。先前研究顯示，CPP 之含量、致突變性、誘發腫瘤活性均高於 B[a]P。本計劃針對 CPP 在體內試驗(動物模式)所產生之去氧核醣核酸鍵結物(DNA adducts)加以研究。主要工作包含(1)利用先前計劃中所獲得之主要 CPP-DNA 鍵結物(cis-3-(deoxyguaonsin-N2-yl)-4-hydroxy-3,4-dihydroCPP 異構物)進行抗體製造，並建立其酵素連結免疫吸附法(ELISA)，(2)完成可能影響 CPP-DNA 鍵結異構物生成比例的催化因子之評估(結果報告已投稿)，(3)初步瞭解不穩定 DNA 鍵結物形成之可能性(未免低估正確之致癌風險)，(4)比較 CPP 之與 DNA 及蛋白質(Protein)的結合能力，以及(5)初步探討 CPP 在動物組織分佈及排除之情形(後兩項研究係利用小老鼠體內試驗，目的是尋求最適之生物標記與試驗組織)。		
• 英文摘要	Air pollution is a serious human health problem around the world including Taiwan. Some genotoxic compounds have been found in airborne particles, including polycyclic aromatic hydrocarbons (PAHs). The amount of PAHs in air particles from urban area in Taiwan is much higher than that of UK, Japan, and US. Therefore, cancer, especially lung cancer, induced by PAHs should be an important environmental medical concern in Taiwan. Cyclopenta[cd]pyrene (CPP), a highly carcinogenic PAH, is a ubiquitous environment contaminant. It is usually found with benzo[a]pyrene (B[a]P) and from certain sources, it is up to 7-fold higher than B[a]P. Thus, it is chosen for this study. The current project aims to investigate CPP-DNA adduct formation. We have already developed the analytical system of CPP-DNA adducts using HPLC and made		

cis-3-(deoxyguaonsin-N2-yl)-4-hydroxy-3,4-dihydroCPP isomers (~1 mg each) in our previous NSC project. We are now in the process of establishing specific ELISA method for detecting specific CPP-DNA adducts. Examinations on factors that may affect the formation of different stereoisomeric CPP-DNA adducts were also completed and the findings have been submitted for possible publication. We also investigated the formation of unstable DNA adducts of CPP in vitro. CPP binding affinity to DNA and protein, respectively, as well as tissue distribution and clearance of CPP were also analyzed using a mouse model.