• 計畫中文名稱	大氣微粒之生物與金屬成份特性研究		
• 計畫英文名稱	Study on the Biological and Metallic Compositions of Ambient Particulates		
• 系統編號	PB9709-0718	• 研究性質	基礎研究
• 計畫編號	NSC97-2221-E038-003	• 研究方式	學術補助
• 主管機關	行政院國家科學委員會	• 研究期間	9708 ~ 9807
• 執行機構	臺北醫學大學公共衛生學研究所		
• 年度	97 年	• 研究經費	738 千元
• 研究領域	環保工程		
• 研究人員	趙馨,韓柏檉		
• 中文關鍵字	細懸浮微粒；粗懸浮微粒；真菌過敏原；內毒素；重金屬		
• 英文關鍵字	fine particles； coarse particles； fungal allergens； endotoxin； heavy metals		
• 中文摘要	懸浮微粒是造成我國過去十年空氣品質不良的主要空氣污染物，由於其組 成成份複雜，成份特性及健康危害尚未完全確定。生物性微粒及重金屬是大氣 懸浮微粒中的重要成份，且皆爲呼吸道及心血管疾病的危險因子，爲釐清其個 別和共同的健康危害，有必要進行長期監測，評估其特性及交互作用。本研究 計畫將於台北都會區進行爲期二年的大氣環境監測，評估大氣粗微粒(PM10-2.5) 及細微粒(PM2.5)中，生物性成份和重金屬的特性以及濃度變化。主要測量的生 物性成份爲真菌過敏原和細菌內毒素，重金屬則爲鉛、鎘、汞和砷。大氣微粒 將於各季節進行爲期二個星期的連續採樣，建立背景資料。由於長程傳輸事件 （如沙塵暴）可能會影響大氣中生物性微粒及金屬的成份及濃度，因此本研究 亦將針對研究期間環保署發佈的沙塵預警，進行長程傳輸事件影響前後及期間 的監測。此外，我們將連結環保署鄰近空氣品質測站的每日監測資料，利用統 計模式評估大氣懸浮微粒中生物性成份及重金屬濃度與氣象因子、大氣污染物 和長程傳輸事件間之相關性。本研究結果將提供大氣粗微粒及細微粒中，生物 性成份及重金屬的特性與長期變化趨勢資料，並瞭解微粒成份與其他大氣環境 因子間的交互作用，此資料將有助於釐清各空氣污染物對健康風險的貢獻。		
• 英文摘要	Particulates with aerodynamic diameters ≤ 10μm (PM10) are the major air pollutants deteriorating ambient air quality in our country for the past 10 years. Because of the complex compositions of PM10, its properties and health effects are yet characterized thoroughly. Biological particulates and heavy metals are important components of PM10 and are both risk factors of respiratory and cardiovascular diseases. In order to clarify their individual and combined health effects, it is necessary to evaluate the characteristics and interrelationships of these PM10 compositions longitudinally. This study will conduct a two-year		

	environmental monitoring in Taipei metropolitan to evaluate the concentrations and distributions of biological and metallic components in coarse (particulates with aerodynamic diameters between 10 and 2.5 μm, PM10-2.5) and in fine particles (particulates with aerodynamic diameters ≤ 2.5 μm, PM2.5). Measured components will include: fungal allergens, endotoxin, lead, cadmium, mercury and arsenic. Environmental sampling will be conducted every season for two weeks to establish baseline data. We will also monitor coarse and fine particles before, during and after Asian dust events to evaluate the impacts of long-range transported pollution on their compositions. The interrelationships among biological and metallic compositions of coarse and fine particles, meteorological factors, other air pollutants, and Asian dust events will be examined using statistical models. The results of this study will provide the characteristics and temporal variations of specific particulate compositions and their interactions with other ambient environmental factors, which will be useful for future studies to assess the individual and combined contributions of air pollutants to health risks.