• 系統編號	RC9102-0117
• 計畫中文名稱	都會區居民之金屬每日攝取量與潛在健康威脅之評估(II)
• 計畫英文名稱	Estimatin of Daily Intake of Metals and Potential Health Threat for Metropolitan Residents (II)
• 主管機關	行政院國家科學委員會
• 計畫編號	NSC89-2314-B038-058
• 執行機構	台北醫學院公共衛生系
• 本期期間	8908 ~ 9007
• 報告頁數	5 頁
• 使用語言	中文
• 研究人員	韓柏檉；陳叡瑜；徐景宏 Han, Bor-Cheng；Chen, Ruey-Yu；Hsu, Ching-Hung
• 中文關鍵字	金屬攝取量；健康威脅；健康危害；膳食
• 英文關鍵字	Metal intake；Health threat；Health hazard；Dietary
• 中文摘要	在台灣金屬污染是一相當嚴重且受到重視的研究課題，人們可能經由吸入、皮膚接觸、或由飲食與飲水而暴露。尤其是飲水與飲食（各類食物），爲都會區居民較易暴露的途徑，如人類每日所攝取之六大類食品，亦有可能是金屬進入體內的一個重要途徑。又若人類消費受金屬污染的魚貝類，則發現其體內金屬濃度高於一般民眾；再加上現代生活型態的改變，以及認爲吃海鮮能壯陽的觀念盛行，使得許多海鮮大餐、吃到飽餐廳紛紛出籠，無形中提昇了都會區居民金屬暴露的機會。除了海鮮能壯陽，一般中國人亦認爲食用中藥可養生、補身等功效，亦有許多慢性病人擔心服用西藥或注射合成藥物會危害健康而尋求中醫藥治療。另外，除了食物，人類每日所需之飲水亦是值得關注的，如過去台灣的研究指出，井水中高濃度的無機砷與各種癌症之死亡率間發現有很顯著的相關性。有鑑於此，本研究調查分析與評估台灣都會區環境介質－不同食物與飲用水中之金屬濃度，並透過問卷之方式，瞭解居民之飲食與飲水型態與狀況、消費頻率等。繼而參照美國環保署之風險基準濃度表之原理內容，進行估算居民經由飲食及飲水等環境介質而暴露於金屬之標的危害商數與終生致癌的機率。其檢測結果，五大類食品多以豆蛋魚肉類的金屬濃度爲最高，依序爲 Cu: 0.15~27.83ppm ；Zn:4.85~64.51ppm ；Cd: 0.47~140.22ppb ；As:1.68~2610.29ppb ；Pb: N.D.~58.10ppb 。其蝦蟹類及貝類的金屬濃度皆高於魚類，當中又以鋅的濃度爲最高。中藥中不論是生藥材、科學中藥或是湯藥皆以鋅的濃度較高，其次爲銅的濃度。至於飲用水部分，檢測結果除檢測出有低濃度的砷(N.D.~0.87ppb)及鎘（N.D.~12.36ppb ）外，其餘金屬皆在偵測極限之下。若估算每日攝取金屬量，則以經由水產食品所攝入的金屬量爲最多，當中又以鋅的量爲最。若估算標的危害商數及致癌風險，則以中醫門診慢性病病患且平日又嗜好食用水產食品者爲最高。其風險值已超過可接受的終身致癌風險值 10 -6 。對於都會區居民應多加關注生活飲食型態，並建議政府單位應擬定相關法案，嚴加監測環境介質對人民健康的危害。
• 英文摘要	Metal pollution is one of the most serious environmental problems in Taiwan. It is also a highly concerned research topic recently. People could be exposed

through drinking water, food intake, inhalation and dermal contact. Intake of contaminated food and drinking water is the main exposure to toxic chemicals for people living in metropolis. People who consumed large amount of contaminated seafood were found higher concentrations of heavy metals in their tissue. We collected data through structured questionnaire, interview, and laboratory measurement of metal concentration of food and drinking water. Data were analyzed to assess the risk of cancer due to consumption and Target Hazard Quotient (THQ). We found that meat, poultry and eggs have the highest metal concentration, which are Cu 0.15~29.83ppm, Zn 4.85~64.51ppm, Cd 0.47~140.22ppb, As 1.68~2610.29ppb, Pb N.D.~58.10ppb. Metal concentration of shrimp and crab are higher than those in fish. Metal concentration of Chinese herbal medicine, Zn is the highest and after that is Cu. In drinking water we only found low concentration of As (N.D.~0.87ppb) and Cd (N.D.~12.36ppb), other metals are below the detection limits. To assess daily intake of metal, consumption of seafood gets more quantity of metal than other kinds of food and Zn is the highest. To assess THQ and the risk of cancer, chronic patient who take Chinese herbal medicine regularly and also seafood lovers get the highest risk of cancer. Its value is beyond acceptable life time cander risk is 10 -6 . We suggest metropolitan residents should pay more attention to their dietary habit in order to minimize the consumption of contaminants from food.