• 系統編號	RN9604-3559
• 計畫中文名稱	子計畫一---混凝及 O3/UV(或 H2O2)處理程序對消毒副產物有機前質(代表化合物)去除研究(III)
• 計畫英文名稱	Reduction of DBPs Organic Precusors (Model Compounds) by Coagulation and O/sub 3//UV (or H/sub 2/O/sub 2/) Treatment Processes (III)
• 主管機關	行政院國家科學委員會
• 計畫編號	NSC94-2211-E038-001
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• 研究人員	張怡怡 Chang, E. E.
• 中文關鍵字	--
• 英文關鍵字	Low-MW organic precursor; Hydroxyl radical; Aldehyde; Bromate; DBPFP; Ozonation; O3/UV process; Risk assessment
• 中文摘要	查無中文摘要
• 英文摘要	In water treatment process, the high molecule weight (MW) organic precursors such as humic substances can be removed significantly by the coagulation. However, low-MW organic precursors, i.e., resorcinol, phloroglucinol, and p-hydroxybenzoic acid, are not effectively removed by the traditional water treatment process and exhibit high DBP formation potential (DBPFP) during chlorination process. Therefore, the objective in the investigation is intended to evaluate the effect of ozonation of low molecular weight precursors on disinfection by-product (DBP) formation. The results of the investigation reveal that the destruction of organic precursors by hydroxyl radical exhibits higher DBP formation potential than that by ozone molecule. In the O3/UV process, the highly hydroxyl radical exposure results in more reduction of DBP formation. The bromate formation concentration increases with increasing ozone dose and reacting time between ozone and bromide. Furthermore, this investigation also focused on aldehyde formation because of its carcinogenic character. According to the carcinogenic risk assessment, the highest and lowest risks were found in the only chlorination process and O3/UV process, respectively. Therefore, both the ozonation and O3/UV processes can reduce the DBP formation thereby providing the safety drinking water. The modified chlorine decay and DBP formation model can predict the chlorine decay and DBP formation data well. In the DBP predictive model, the assumption of the DBP formation

corresponded to the second order to chlorine consumption in the rapid reaction and the first order to that in the slow reaction exhibits the high correlation coefficient (good fit) in the study.