出國報告（出國類別：會議）

參加「2013 環境鑑識國際研討會」出國報告

服務機關：環保署環境檢驗所
姓名職稱：趙春美 副研究員、鄧名志 副研究員
派赴國家：馬來西亞
出國期間：102 年 11 月 11 日至 102 年 11 月 14 日
報告日期：103 年 1 月 23 日

摘要

2013 環境鑑識國際研討會議（International Conference on Environmental Forensics 2013) 於馬來西亞普特拉賈亞（Putrajaya, 又稱布城或太子城）舉行，由馬來西亞普特拉大學（Universiti Putra Malaysia）主辦，研討會會期自 102 年 11 月 12 日至 11 月 13 日，共計 2 日。研討主題範圍廣泛，涵蓋傳統以及新興科學議題，主題有六大類，分別爲：一、環境監測（Environmental monitoring）；二、分析技術（Analytical techniques）；三、污染控制（Pollution control）；四、環境健康（Environmental health）；五、政策與管制（Policy and governance）；六、資料探勘及環境模擬（Data mining and environmental modeling）。

本次大會匯集許多專家學者對環境領域上研究的成果及探討，經過消化吸收後大致可歸納出幾項重點及心得：一、以塑膠微粒監測全球持久性有機污染物（POPs）及廢水污染物；二、芬蘭環境中持久性有機污染物監測計畫；三、新前處理檢測系統建立－氣流式吹掃微注射萃取；四、環境中石油鑑識及油污染整治；五、環境中重金屬鑑識、健康風險評估及污染整治；六、環境中農藥類與多氯聯苯鑑識分析、流布調查及健康風險評估。

職等此次有幸與會及受邀於大會中提出口頭論文報告，十分感謝環保署經費補助及長官的派任得以參與此會議。藉由參加這次會議，了解他國專家學者在環境各種面向的研究成果及趨勢，獲益匪淺。

目次

壹、目的

職等目前任職於環保署環境檢驗所，承蒙環保署經費補助及長官派任與會出席第一屆環境鑑識國際研討會議（1st International Conference on Environmental Forensics 2013），於2013年11月12日至13日，在馬來西亞吉隆坡的普特拉賈亞舉行。此次會議邀請來自主辦國馬來西亞及其他國家如美國、日本、中國及芬蘭等環境相關領域的學者專家發表專題演講，並有一百多篇口頭論文及海報論文展，內容涵蓋範圍廣，內容也頗爲精彩。

本次參與會議，主要目的乃拓展國際視野，吸收新知及擷取別人的經驗，以供日後應用重要參考。職亦將自行研究『A Novel Simple Pretreatment Approach for Fast Determination of Multi-residue Pesticides in Aqueous Samples』的成果投稿於本次大會，經由大會委員評選後，邀請於會議中以口頭論文報告，能有機會和國際先進們進行交流，亦屬難得機會。

貳、過程

一、行程紀要

2013 年環境鑑識國際研討會（International Conference on Environmental Forensics 2013）於馬來西亞普特拉賈亞（Putrajaya, 又稱布城或太子城）舉行，由馬來西亞普特拉大學（Universiti Putra Malaysia）主辦，研討會會期自 102 年 11 月 12 日至 11 月 13 日，共計 2 日。

日　　期	地　　點	工作紀要
11/11(一)	臺北→普特拉賈亞	啓程
11/12(二)~11/13(三)	普特拉賈亞	2013環境鑑識國際研討會
11/14(四)	普特拉賈亞→臺北	歸程

二、會議紀要

研討主題範圍廣泛，涵蓋傳統以及新的新興科學議題，主題有六大類，分別爲：1.環境監測（Environmental monitoring）；2.分析技術（Analytical techniques）；3.污染控制（Pollution control）；4.環境健康（Environmental health）；5.政策與管制（Policy and governance）；以及 6.資料探勘及環境模擬（Data mining and environmental modeling）。

本次會議來自 20 多個國家，將近 3 百位專家學者參與，上述議題以口頭論文宣讀及壁報論文展示 2 種模式呈現，每日皆有 3 個正式會場同步進行口頭論文平行討論會議，進行方式是使用 Power Point 進行 8 分鐘簡報，然後接受 2 分鐘提問討論，壁報論文配置會場提供與會人員有充足的時間互相交流研討，其中大會專題演講 7 篇，口頭宣讀 86 篇，壁報展示 36 篇。論文內容涵蓋：特徵描述、評估及監測（Characterization, assessment and monitoring）；新方法、快速評估及分析技術（New approach, rapid assessment and analytical techniques）；處理科學技術（Treatment technology）；政策、管制及管理（Policy, governance and management）；環境健康風險評估（Environmental health and risk assessment）；環境監測（Environmental monitoring）；污染控制技術（Pollution

control technology）；環境模擬（Environmental modelling）；環境鑑識最新訊息（Recent updates in environmental forensics）等主題。

本次研討會馬來西亞政府主管業務官員環境及自然資源部（National Resources and Environment）部長 Datuk Seri G. Palanivel 積極參與，並邀請美國、中國、日本、韓國、芬蘭、馬來西亞等國專家學者擔任大會專題演講客座講者，其講題內容如下：

1. 柬埔寨湄公河流域地面水中砷污染情況及人體健康風險。（韓國 Kyoung- Woong Kim）
2. 連結差距：學術研究（提供）與政策方針（需求）。（馬來西亞 Fatimah Mohamed Arshad）
3. 持久性毒性物質與新興化學品之環境地球化學循環。（中國香港 Wong Ming Hung）
4. 生態毒理學鑑識。（美國 Tracy Kim Collier）
5. 環境鑑識最新資訊：
   (1) 國際顆粒監測（International Pellet Watch, IPW）：持久性有機污染物及廢水污染物之全球監測。（日本，高田秀重博士（東京農業和科技大學環境有機地球化學家，國際顆粒監測組織（IPW）創始人）
   (2) 氣流式吹掃微注射萃取（Gas Purge Microsyringe Extraction, GP-MSE）技術及其應用於環境植物樣品分析。（中國 Donghao Li）
   (3) 芬蘭環境中持久性有機污染物：熱點及監測。（芬蘭 Jaana Koistinen）

參、心得

本次參加 2013 年環境鑑識國際研討會，除聆聽及參閱和本所業務相關之論文發表外，亦見識了其他專業領域的報告。大會專題演講之題目內容有許多新興領域之研究，擴展新的視野，並提供國際間環境鑑識最新資訊。論文發表部份包含環境監測、環境鑑識、健康風險評估、污染控制與移除技術以及各種污染物之檢測分析技術等內容，這些資訊將可提供本所執行環境汙染物鑑識及環境背景資料監測調查研究之參考依據。

此次會議本所口頭論文發表題目爲「A novel simple pretreatment approach for fast determination of multi-residue pesticides in aqueous samples」，在第二天的議程報告，亦頗受好評。

彙整本次研討會論文資料之後，歸納出幾項重點及心得：

一、以塑膠微粒監測全球持久性有機污染物（POPs）及廢水污染物

國際顆粒監測組織運用塑膠微粒監測全球持久性有機污染物（POPs）及廢水污染物，此組織是由日本東京農業和科技大學環境有機地球化學家高田秀重博士創始，其開創原因在於全球塑膠製品使用量大且塑膠不易分解，塑膠只會逐漸粉碎轉變成爲微粒子，美國國家海洋及大氣管理局將此塑膠微粒長度小於 5 毫米稱之爲「微塑膠」，塑膠會吸收持久性有機污染物及親脂性有機物，故非常適合於追蹤這些污染物及探討它們如何進入食物網。

高田秀重博士使用之微塑膠受體是由塑膠製品的原料而產生的微小樹脂顆粒，高田博士自 2005 年起，從 50 個國家收集將近 300 個微塑膠樣品，分析檢測微塑膠中持久性有機污染物並統計彙整出全球持久性有機污染物地圖，得知世界持久性有機污染物之分佈與濃度範圍。

藉由此次高田博士之發表使我們獲得全球持久性有機污染物之污染現況，微塑膠藉由洋流於海洋中飄流並持續吸收持久性有機污染物，也因此造成微塑膠匯聚於高緯度地區，亦使得高緯度地區海灘檢出之持久性有機污染物濃度相較於中、低緯度地區海灘來的高。此次發表亦有臺灣地區之數值，於臺灣海灘之塑膠顆粒中多氯聯苯總量

濃度爲 85 ng/g-pellet，全球濃度約介於 0.26 ~ 2746 ng/g-pellet 之間。

二、芬蘭環境中持久性有機污染物監測計畫

持久性有機污染物在環境中長期存在、持久不易分解、具生物濃縮及生物蓄積性等特性，此化合物之所以受到重視除了上述特性外，最主要是因爲其對生物之危害，其危害性包括：對免疫系統的危害、對內分泌系統的危害、對生殖和發育的危害、致癌、器官組織病變以及精神心理疾患。因此國際採取相關管制措施及監控，於是制定斯德哥爾蒙公約，目前已列管農藥類、工業用化學品及無意衍生化學物質等共 23 種，包括阿特靈、可氯丹、地特靈、安特靈、飛佈達、六氯苯、滅蟻樂、毒殺芬、多氯聯苯、α-六氯環已烷、β-六氯環已烷、靈丹、十氯酮、六溴聯苯、六溴二苯醚和七溴二苯醚、四溴二苯醚和五溴二苯醚、五氯苯、安殺番、六溴環十二烷、滴滴涕、全氟辛烷磺酸及其鹽類和全氟辛烷磺酸氟、戴奧辛、呋喃等。

芬蘭水道及波羅的海中長期存在持久性污染物污染問題，持久性有機污染物自 1960 年起因工業開發與農藥使用，開始危害汙染芬蘭水道及波羅的海，而波羅的海被視爲世界重度污染海域之一，因此芬蘭開始針對其污染熱點進行監測，監測化合物分別爲戴奧辛、多氯聯苯、多溴二苯醚、多氯萘及全氟辛烷磺酸等。爲因應歐盟法規，監測分析芬蘭水道及波羅的海之底泥與魚體中戴奧辛、多氯聯苯及全氟辛烷磺酸濃度。芬蘭環境學會則自 1984 年監測水道中多氯聯苯及有機氯農藥之濃度，且每年監測環境中有害物質。

三、新前處理檢測系統建立－氣流式吹掃微注射萃取

近年來，分析儀器分析檢測功能日益強大，然而大部份的分析檢測仍無法將基質直接注入分析待測物，所以樣品前處理非常重要。前處理步驟是最耗時且最易造成實驗誤差的部份，因此如何簡化前處理過程及減少誤差來源因素是檢測分析界常面臨之課題。

針對揮發性有機物及半揮發性有機物之檢測，爲簡化前處理過程開發頂空液相微萃取（Headspace liquid phase microextraction, HS-LPME）及液相微萃取（Liquid phase microextraction, LPME）技術，此技術可以將樣品基質中待測物富集於注射針頭上微米大小之液珠，然後將液珠回抽於注射針中，在注入儀器中分析，如此可簡化前處理流

程且減少溶劑使用及廢棄物產生。但其前處理方式仍有諸多限制，LPME 富集效能不高，有基質狀態下具有基質與待測物之競爭效應，萃取時間仍長，且 HS-LPME 及 LPME 同樣對半揮發性有機化合物感度不佳等問題。於是，爲了克服其缺點，所以開發項新的氣流式吹掃微技術應用於一般注射針，此技術稱爲氣流式吹掃微注射萃取（Gas purge microsyringe extraction, GP-MSE）。

GP-MSE 運用簡單的氣流系統、溫度控制及傳統注射針以增加注射針上微液珠之表面積，此技術應用於揮發性有機物及半揮發性有機物之定量僅需 2 分鐘，且此前處理系統可直接連結氣相層析質譜儀。在最新研究中，GP-MSE 亦被使用當做被動式採樣設備，用於檢測空氣中持久性有機污染物及揮發性有機物。

本次會議中發表內容主要是將 GP-MSE 運用於環境植物中污染物之檢測，提出最新研究主題包括：1. GP-MSE 技術應用於植物樣品之分析；2.中國長白山地區不同區域生長植物之各類葉種中多環芳香烴污染層級生物監測；3.運用樹葉識別污染可能來源。此技術應用於多環芳香烴、有機氯農藥及烷基多環芳香烴之檢測，其回收率爲 85%~107%，再現性爲 3.03%~8.3%，方法偵測極限爲 5.20~11.86 pg/mL。GP-MSE 設備便宜且容易操作，在長白山空氣品質監測研究中，針對 48 項不同品種之 75 件樹葉中檢測多環芳香烴，檢測結果顯示不同區域之多環芳香烴濃度變化大，樹葉內總多環芳香烴濃度範圍爲 118~398 ng/g d.w.，濃度最高和最低值分別位於長白山北方（迎風面）和東北方（背風面）。在相同區域不同樹葉之檢出濃度非常接近，低於 2 倍變異數。

四、環境中石油鑑識及其油污染整治

馬來西亞產油，石油成爲該國最富經濟價值之出口物資，帶動石油探採業及石化工業興盛，然而原油探採過程中，由於滲漏及外洩會造成原油污染環境，石化工業煉製過程會產生許多石油碳氫化合物，此污染物會間接與直接逸散於環境中，危害馬來西亞環境，因此馬來西亞對於原油污染源之鑑識、石油產物與副產物污染種類之調查以及原油污染整治等議題日益重視，故於此次研討會中有許多關於該議題之論文研究。鑑識分析及污染流布調查論文研究包括沙巴州大氣環境中石油碳氫化合物之季節變化；馬來西亞瓜拉雪蘭莪河表層底泥中石油碳氫化合物之分布；馬來西亞登嘉樓之南海海岸底泥中芘（Perylene）及其他碳氫化合物分布及來源；馬來西亞半島 Merambong

島及麻坡河之底泥中多環芳香烴分布；柴油之特徵化合物同位素分析法應用於鑑識研究；漁船作業燃料油消耗造成溫室氣體排放之研究；馬來西亞吉蘭丹於天氣因素下 Pengkalan Chepa 河中懸浮固體之多環芳香烴檢測；水品質與底泥多環芳香烴富集對馬來西亞魚業養殖之影響；波斯灣海岸工業土壤中多環芳香烴之來源鑑別；馬來西亞半島佩奈河及麻六甲河底泥中多環芳香烴；廢油中存在污染物：主要汙染物多氯聯苯與多環芳香烴之短篇評析；馬來西亞麻六甲表層底泥中多環芳香烴之分布；運用特定污染物鑑定技術測定油田密閉式循環冷卻水系統之過濾效能研究等篇。

污染整治研究包括家禽糞便及灰化木屑於植物提取法中萃取原油土壤中鎘及鉛之影響；以反應曲面法對生物柴油廢水預處理之最佳化凝結步驟；植物復育處理遭柴油污染砂石技術藉由人工曝氣增強總石油碳氫化合物之降解；由暴露於柴油之 Scirpus grossus 中萃提出碳氫化合物降解菌之企業發展；使用油污染土壤中離析之菌種進行原油生物降解；運用遭柴油污染培植出 Paspalum vaginatum Sw.降解總石油碳氫化合物等篇，其中植物修復技術是利用植物從環境中去除污染物集中起來在地上植物組織，以達到污染整治目的，而植物提取可以同時在水和土壤環境中使用。

五、環境中重金屬鑑識、健康風險評估及其污染整治

重金屬來自於自然地質環境及人類工業經濟活動污染，環境中重金屬過量對於人體及生物體危害甚大，尤其重金屬於環境中不易降解，且具生物累積性。因此只要是環境分析研究調查，一定皆有重金屬之研究。

重金屬鑑識分析及流布調查研究包括運用附生植物地衣收集微量元素執行馬來西亞雪蘭莪郊區生物監測；馬來西亞金馬崙高原茶種植區之青苔及苔蘚中重金屬；染整工業廢水重金屬分析－以植物及土壤樣品比較研究原子吸收光譜儀及 HACH 色度計之分析能力；以 HPLC-ICP-MS 檢測魚體樣品中甲基汞；以衛星裝置傳感器監測遍及整個馬來西亞之砷型態分布；玻璃市河河口底泥中重金屬與有機物及底泥粒徑大小之分布；馬來西亞柔佛 Kong Kong Laut 之微量元素（銅、鉛及鉻）含量；巴生港紅樹林及河口底泥中汞分布;馬來西亞 Teluk Kemang 及 Tanjung Harapan 之黑線蜑螺及泰國海蝸牛中鐵、鉛、鋅、鎳及鎘累積量；從離心廢棄乳膠污泥混合物中執行無機物分離及特徵描述；以石灰岩、碳酸鈣岩及蛇紋岩進行酸性礦井水被動式採樣等篇。

重金屬健康風險評估研究包括馬來西亞沙登鎮之小學教室灰塵中重金屬暴露量之健康風險評估；亞洲黃鱔（Monopterus albus）中銅及鋅含量之健康風險；馬來西亞柔佛居鑾之二區域淡水魚重金屬（砷、鎘、鉻及鉛）濃度及健康風險評估；馬來西亞沙巴亞庇之貝類消費量之重金屬健康風險評估；馬來西雅雪州（Seri Kembangan）城市土壤中重金屬含量之潛在健康風險評估；侵略性雜草寬葉十萬錯（Asystasiagangetica）作爲重金屬生物利用率及污染性之生物指標；鹽水蝦幼體用於重金屬污染物之生物毒性試驗等篇。

污染整治研究包括以死亡生物之鈣化骨骸移除水溶液中 Cd (II) 及 Pb (II) 離子；以奈米結晶絲光沸石移除廢海水中銫 (Cs)；由碩大薰草分離出 3 種芽孢桿菌用以生物技術吸收鉛；運用反應曲面法以墨西哥報春花（Ludwigia octovalvis）在蘆葦床處理系統使砷植物復育法最佳化；使用沸石當作吸附劑移除石化廢水中硼及砷等篇。

六、環境中農藥類與多氯聯苯鑑識分析、流布調查及健康風險評估

人類農業活動爲使耕種作物不受病蟲害威脅，開發了可殺死病蟲、病菌、黴菌及雜草等生物之化合物，這類殺蟲、殺菌、殺黴及除草之藥劑應用農業生產則統稱爲農藥，近年來發現有些農藥會長久蓄積於環境中不易分解，而且甚至會干擾生物體內分泌系統，因此相關化合物之分析技術及環境調查日受重視。

多氯聯苯爲持久性有機污染物之一，具耐熱性、電絕緣性良好且化學性質穩定，早期用於加熱冷卻用熱載體、電容器及變壓器內當作絕緣材料，也常作爲塗料及溶劑使用，由於發生米糠油事件，進而發現其毒害及致癌性，因此世界各國逐漸禁用，但其不易分解且工業製程中會釋放，致使現今環境中仍有多氯聯苯的存在。因應斯德哥爾蒙公約，對於公約國皆要求需進行多氯聯苯監測、調查及管制。

論文研究包含加拿大垃圾掩埋場及污水處理廠放流液中 PCB 含量；馬來西亞金馬崙高原水體環境中有機氯農藥；廢油中存在污染物：主要汙染物多氯聯苯與多環芳香烴之短篇評析；農場經營管理之成人與小孩對於農藥皮膚污染與微環境之相互關係；馬來西亞多氯聯苯污染狀態層級等篇。

肆、建議

一、持久性有機污染物在環境中長期存在、持久不易分解、具生物濃縮、生物蓄積性且對生態危害甚鉅，因此國際採取相關管制措施及監控，制定斯德哥爾蒙公約。臺灣雖非公約國，但身爲世界的一員，對於全球環境保護亦應盡一份心力，因此對於公約管制項目本國亦同步執行，爲與世界接軌，我國應持續對本國持久性有機污染物進行流布調查，以了解本國環境中持久性有機污染物之時空趨勢。

二、環境污染事件發生時，必有其污染源及肇事者，但如果無法第一時間捉到兇手，往往追查污染源及肇事者的困難度就大大提高，因此如何由污染現場抽絲剝繭找出源頭，往往需要精準的檢驗分析工具與技術、強大資料庫搜尋系統以及不同領域的專業人士。本所即將面臨組織改造及技術轉型之衝擊，環境鑑識對於本所組織編組與轉型是一項重要業務及挑戰，如何有效提升本所環境鑑識能力是一項重要課題與工作。未來可積極參與國際性鑑識會議及學術研討，與國際接軌並經驗交流，學習新的鑑識檢測技術，以提升相關的能力與技術。

附件一 會議日程及議程

International Conference on Environmental Forensics 2013

12 – 13 November 2013, Putrajaya Marriott Hotel

Environmental Forensics
Research Centre (ENFORCE)
Faculty of Environmental Studies

UPM
UNIVERSITI PUTRA MALAYSIA

OPENING CEREMONY

12th November 2013 (Tuesday)	
8:15 - 9:00	Registration
OPENING CEREMONY (Grand Ballroom)	
8:15	Arrival and registration of participants
8:30	Arrival of guests
8:50	Arrival of YBhg. Prof. Datuk Dr. Mohd. Fauzi Hj. Ramlan Vice Cancellor of Universiti Putra Malaysia
9:00	Arrival of YB Datuk Seri G. Palanivel Minister of Natural Resources and Environment, Malaysia
9:05	National Anthem and Putra Gemilang
9:10	Recitation of Do'a
9:15	Speech by Associate Prof. Dr. Ahmad Zaharin Aris Chairman of iENFORCE 2013
9:20	Welcoming Address by YBhg. Prof. Datuk Dr. Mohd. Fauzi Hj. Ramlan Vice Cancellor of Universiti Putra Malaysia
9.25	Officiating speech by YB Datuk Seri G. Palanivel Minister of Natural Resources and Environment, Malaysia
9:35	Multimedia Presentation
9:45	MoU Signing Ceremony
9:55	Momento Presentation and Photography Session
10:10	Tour of Conference Exhibition and Refreshment
10:20	Press Conference
	End of Opening Ceremony

12th November 2013 (Tuesday)	
08:15 - 09:00	Registration
09:00 - 10:00	Opening Ceremony
10:00 - 10:15	Group Photo
10:15 - 10.20	Coffee Break
10:20 - 11:00	Poster Session 1
11:00 - 11:30	**KEYNOTE 1 Prof. Dr. Wong Ming Hung** Chairperson: Assoc. Prof. Dr. Ahmad Zaharin Aris
11:30 - 12:30	Parallel Paper Presentations, Session 1A, 1B and IC Session 1A: Characterization, assessment and monitoring Chairperson: Prof. Dr. Wong Ming Hung Session 1B: New approach, rapid assessment and analytical techniques Chairperson: Dr. Wan Lutfi Wan Johari Session 1C: Treatment technology Chairperson: Assoc. Prof. Dr. Mohammad Firuz Ramli
12:30 - 13:00	Poster Session 2
13:00 - 14:30	Lunch
14:30 - 15:15	**KEYNOTE 2 Prof. Datin Paduka Dr. Fatimah Mohamed Arshad** Chairperson: Assoc. Prof. Dr. Ramdzani Abdullah
15:15 - 16:15	Parallel Paper Presentations, Session 2A, 2B and 2C Session 2A: Policy, governance and management Chairperson: Assoc. Prof. Dr. Mohd Bakri Ishak Session 2B: Environmental health and risk assessment Chairperson: Assoc. Prof. Dr. Puziah Abdul Latif Session 2C: Environmental monitoring Chairperson: Assoc. Prof. Dr. Wan Nor Azmin Sulaiman
16:15 - 16:30	Coffee Break
16:30 - 17:45	Recent Updates in Environmental Forensics Chairperson: Prof. Dr. Mohamad Pauzi Zakaria

13th November 2013 (Wednesday)	
09:00 - 09:45	**Talk by Prof. Dr. Hideshige Takada** Chairperson: Prof. Dr. Mohamad Pauzi Zakaria
09:45 - 10:00	Coffee Break
10:00 - 10:30	Poster Session 3
10:30 - 12:00	Parallel Paper Presentations, Session 3A, 3B, and 3C Session 3A: Characterization, assessment and monitoring Chairperson: Mdm. Rosta Harun Session 3B: New approach, rapid assessment and analytical techniques Chairperson: Dr. Mohd Yusoff Ishak Session 3C: Environmental monitoring Chairperson: Mdm. Tengku Hanidza Tengku Ismail
12:00 - 13:00	Poster Session 4
13:00 - 14:00	Lunch
14:00 - 14:45	**KEYNOTE 3 Dr.Tracy Collier** Chairperson: Prof. Dr. Narayanan Kannan
14:45 - 16:00	Parallel Paper Presentations, Session 4A,4B, and 4C Session 4A: Pollution control technology Chairperson: Dr. Faradiella Mohd Kusin Session 4B: Environment health and risk assessment Chairperson: Dr. Ferdaus Mohamat Yusuff Session 4C: Environmental modelling Chairperson: Assoc. Prof. Dr. Ahmad Makmom Abdullah
16:00 - 16:15	Coffee Break
16:15 - 17:30	Recent Updates in Environmental Forensics Chairperson: Dr.Tracy Collier
17:30	Closing Remarks

PROGRAMME OVERVIEW

12th November 2013 (Tuesday)	
08:15 - 09:00	Registration
09:00 - 10:00	Opening Ceremony
10:00 - 10:15	Group Photo
10:15 - 10.20	Coffee Break
10:20 - 11:00	Poster Session 1
11:00 - 11:30	**KEYNOTE 1 Prof. Dr. Kyoung-Woong Kim** Chairperson: Assoc. Prof. Dr. Ahmad Zaharin Aris
11:30 - 12:30	Parallel Paper Presentations, Session 1A, 1B and IC Session 1A: Characterization, assessment and monitoring Chairperson: Prof. Dr. Wong Ming Hung Session 1B: New approach, rapid assessment and analytical techniques Chairperson: Dr. Wan Lutfi Wan Johari Session 1C: Treatment technology Chairperson: Assoc. Prof. Dr. Mohammad Firuz Ramli
12:30 - 13:00	Poster Session 2
13:00 - 14:30	Lunch
14:30 - 15:15	**KEYNOTE 2 Prof. Datin Paduka Dr. Fatimah Mohamed Arshad** Chairperson: Assoc. Prof. Dr. Ramdzani Abdullah
15:15 - 16:15	Parallel Paper Presentations, Session 2A, 2B and 2C Session 2A: Policy, governance and management Chairperson: Assoc. Prof. Dr. Mohd Bakri Ishak Session 2B: Environmental health and risk assessment Chairperson: Assoc. Prof. Dr. Puziah Abdul Latif Session 2C: Environmental monitoring Chairperson: Assoc. Prof. Dr. Wan Nor Azmin Sulaiman
16:15 - 16:30	Coffee Break
16:30 - 17:45	Recent Updates in Environmental Forensics Chairperson: Prof. Dr. Mohamad Pauzi Zakaria

13th November 2013 (Wednesday)	
09:00 - 09:45	**KEYNOTE 3 Prof. Dr. Wong Ming Hung** Chairperson: Prof. Dr. Mohamad Pauzi Zakaria
09:45 - 10:00	Coffee Break
10:00 - 10:30	Poster Session 3
10:30 - 12:00	Parallel Paper Presentations, Session 3A, 3B, and 3C Session 3A: Characterization, assessment and monitoring Chairperson: Mdm. Rosta Harun Session 3B: New approach, rapid assessment and analytical techniques Chairperson: Dr. Mohd Yusoff Ishak Session 3C: Environmental monitoring Chairperson: Mdm. Tengku Hanidza Tengku Ismail
12:00 - 13:00	Poster Session 4
13:00 - 14:00	Lunch
14:00 - 14:45	**KEYNOTE 4 Dr.Tracy Collier** Chairperson: Prof. Dr. Narayanan Kannan
14:45 - 16:00	Parallel Paper Presentations, Session 4A,4B, and 4C Session 4A: Pollution control technology Chairperson: Dr. Faradiella Mohd Kusin Session 4B: Environment health and risk assessment Chairperson: Dr. Ferdaus Mohamat Yusuff Session 4C: Environmental modelling Chairperson: Assoc. Prof. Dr. Ahmad Makmom Abdullah
16:00 - 16:15	Coffee Break
16:15 - 17:30	Recent Updates in Environmental Forensics Chairperson: Dr.Tracy Collier
17:30	Closing Remarks

PROGRAMME SUMMARY

12th November 2013 (Tuesday)			
0815 – 0900	Registration		
0900 – 1000	Opening Ceremony		
1000 – 1015	Group Photo		
1015 – 1020	Coffee Break		
1020 – 1100	Poster Session 1		
1100 – 1130	KEYNOTE 1		
1130 – 1230	Parallel Paper Presentations: Session 1A, 1B and 1C		
	Session 1 A	Session 1 B	Session 1 C
1130 – 1140	P1A-1	P1B-1	P1C-1
1140 – 1150	P1A-2	P1B-2	P1C-2
1150 – 1200	P1A-3	P1B-3	P1C-3
1200 – 1210	P1A-4	P1B-4	P1C-4
1210 – 1220	P1A-5	P1B-5	P1C-5
1220 – 1230	P1A-6	P1B-6	P1C-6
1230 – 1300	Poster Session 2		
1300 – 1430	Lunch		
1430 – 1515	KEYNOTE 2		
1515 – 1625	Parallel Paper Presentations: Session 2A, 2B and 2C		
	Session 2 A	Session 2 B	Session 2 C
1515 – 1525	P2A-1	P2B-1	P2C-1
1525 – 1535	P2A-2	P2B-2	P2C-2
1535 – 1545	P2A-3	P2B-3	P2C-3
1545 – 1555	P2A-4	P2B-4	P2C-4
1555 – 1605	P2A-5	P2B-5	P2C-5
1605 – 1615	P2A-6	P2B-6	P2C-6
1615 – 1625	P2A-7	P2B-7	P2C-7
16:15 - 16:30	Coffee Break		
16:30 - 17:45	Recent Updates in Environmental Forensics		

13th November 2013 (Wednesday)			
0900 – 0945	KEYNOTE 3		
0945 – 1000	Coffee Break		
1000 – 1030	Poster Session 3		
1030 – 1200	Parallel Paper Presentations: Session 3A, 3B and 3C		
	Session 3 A	Session 3 B	Session 3 C
1030 – 1040	P3A-1	P3B-1	P3C-1
1040 – 1050	P3A-2	P3B-2	P3C-2
1050 – 1100	P3A-3	P3B-3	P3C-3
1100 – 1110	P3A-4	P3B-4	P3C-4
1110 – 1120	P3A-5	P3B-5	P3C-5
1120 – 1130	P3A-6	P3B-6	P3C-6
1130 – 1140	P3A-7	P3B-7	P3C-7
1140 – 1150	P3A-8	P3B-8	P3C-8
1150 – 1200	P3A-9	P3B-9	P3C-9
1200 – 1300	Poster Session 4		
1300 – 1400	Lunch		
1400 – 1445	KEYNOTE 4		
1445 – 1600	Parallel Paper Presentations: Session 4A, 4B and 4C		
	Session 4 A	Session 4 B	Session 4 C
1445 – 1455	P4A-1	P4B-1	P4C-1
1455 – 1505	P4A-2	P4B-2	P4C-2
1505 – 1515	P4A-3	P4B-3	P4C-3
1515 – 1525	P4A-4	P4B-4	P4C-4
1525 – 1535	P4A-5	P4B-5	P4C-5
1535 – 1545	P4A-6	P4B-6	P4C-6
1545 – 1555	P4A-7	P4B-7	P4C-7
16:00 - 16:15	Coffee Break		
16:15 - 17:30	Recent Updates in Environmental Forensics		
17:30	Closing Remarks		

12th November 2013 (Tuesday) 11:00 – 11:30 Keynote Address 1 (Grand Ballroom)
Title: Arsenic Contamination in Groundwater and Human Health Risks in the Mekong River Basin of Cambodia **Prof. Dr. Kyoung-Woong Kim** Chairperson: Assoc. Prof. Dr. Ahmad Zaharin Aris

12th November 2013 (Tuesday) 11:30 – 12:30 Session 1A (Kuala Lumpur Room) Theme: Characterization, assessment and monitoring Chairperson: Prof. Dr. Wong Ming Hung			
Time	Authors	Title	Code
1130	Boon Siong Wee, Shakirah Abd Shukor, Ahmad Firdaus Khaidir, Mohd Suhaimi Hamzah, Shamsiah Abdul Rahman, Md Suhaimi Elias, Nazaratul Ashifa Abdullah Salim and Azian Hashim	Biomonitoring of trace elements using epiphytic lichens collected in a suburban area of Selangor, Malaysia.	P1A-1
1140	Mahyar Sakari, Jupri Bin Mohd Bani, Soon Zhi Yang, Justin Sentian and Sohail Rafiq	Seasonal Variation of Aliphatic Hydrocarbons in Atmospheric Environment of Kota Kinabalu, Sabah	P1A-2
1150	Narayanan Kannan, Senthil Kumar Kuruthachalam, Monica Danon-Schaffer and Won Joon Shim	Polychlorinated biphenyl contamination to the Canadian Artic from landfills and sewage treatment outlets	P1A-3
1200	Ley Juen Looi, Ahmad Zaharin Aris and Fatimah Md. Yusoff	Factor Controlling The Total Exchangeable Cation of Estuaries and Coastal Sediment	P1A-4
1210	Azrul Normi Idris, Ahmad Zaharin Aris, Ismail Tawnie and Saim Suratman	Preliminary Physicochemical Assessment of Groundwater in Kg. Salang, Pulau Tioman, Pahang, Malaysia	P1A-5
1220	Siti Aishah Ramsie, Syaizwan Zahmir Zulkifli, Ferdaus Mohamat Yusuff, Ahmad Ismail and Che Abd Rahim Mohamed	Geochronology of ^{210}Pb in Sediments of Sepang Besar River, Malaysia	P1A-6

12th November 2013 (Tuesday) 11:30 – 12:30 Session 1B (Penang Room) Theme: New approach, rapid assessment and analytical techniques Chairperson: Dr. Wan Lutfi Wan Johari			
Time	Authors	Title	Code
1130	Asmat Ahmad, Ayokunle Christopher Dada, Usup Gires and Lee Yook Heng	Enterococci concentrations in tropical coastal beaches in Malaysia correlate better with pathogen levels and other water quality indicators than faecal coliforms	P1B-1
1140	Mohamad Hadzri Yaacob, Nur Syamimi Zainudin and Noor Zuhartini Md. Muslim	Cathodic Voltammetry Stripping (CSV) Analysis of Reactive Black 5 (RB5) Dye using Hanging Mercury Electrode in Basic Medium	P1B-2
1150	Syahidah Akmal Muhammad, Russell David Frew and Alan Ross Hayman	Compound-specific isotope analysis of diesel fuels in a forensic investigation	P1B-3
1200	Noorain Mohd Isa and Ahmad Zaharin Aris	Application of Geochemical and Geostatistical Analyses in Observing the Controlling Factors of Groundwater Compositions	P1B-4
1210	Noor Syuhadah Subki, Rohasliney Hashim and Noor Zuhartini Md Muslim	Heavy Metals Analysis of Batik Industry wastewater, Plant and Soil Samples: A Comparison Study of FAAS and HACH Colorimeter Analytical Capabilities	P1B-5
1220	Lilian Lim and Kenneth Ong	Speciation: Determination of Methylmercury in Fish Samples with HPLC-ICP-MS	P1B-6

12th November 2013 (Tuesday) 11:30 – 12:30 Session 1C (Kelantan Room) Theme: Treatment technology Chairperson: Assoc. Prof. Dr. Mohammad Firuz Ramli			
Time	Authors	Title	Code
1130	Nurull Muna Daud, Siti Rozaimah Sheikh Abdullah and Hassimi Abu Hassan	Optimization of Coagulation Process for the Pre-Treatment of Biodiesel Wastewater Using Response Surface Methodology	PIC-1
1140	Ai Phing Lim, Ahmad Zaharin Aris and Hafizan Juahir	An experimental approach on the removal of Cd (II) and Pb (II) ions from aqueous solutions by using dead calcareous skeletons	PIC-2
1150	Keun-Young Lee, Minsung Park, Eil-Hee Lee, Kwang-Wook Kim, Dong-Yong Chung, Kyoung-Woong Kim and Jei-Kwon Moon	Cesium Removal from Waste Seawater by Nanocrystalline Mordenite	PIC-3
1200	Zufarzaana Zulkeflee and Antoni Sanchez	Green biotechnological approach as an alternative to chemical processes: The case of bioflocculant production through solid-state fermentation of soybean wastes	PIC-4
1210	Faradiella Mohd Kusin and Azmi Aris	Anoxic limestone drain for treatment of highly acidic water	PIC-5
1220	Bieby Voijant Tangahu, Siti Rozaimah Sheikh Abdullah, Hassan Basri, Mushrifah Idris, Nurina Anuar and Muhammad Mukhlisin	Biosorption of lead (Pb) by three Bacillus species (Bacillus cereus, Bacillus pumilus and Bacillus subtilis) isolated from Scirpus grossus	PIC-6

12th November 2013 (Tuesday) 14:30 – 15:15 Keynote Address 2 (Grand Ballroom)
Title: Bridging the Gap: Research and Policy **Prof. Datin Paduka Dr. Fatimah Mohamed Arshad** Chairperson: Assoc. Prof. Dr. Ramdzani Abdullah

12th November 2013 (Tuesday) 15:15 – 16:15 Session 2A (Penang Room) Theme: Policy, governance and management Chairperson: Assoc. Prof. Dr. Mohd Bakri Ishak			
Time	Authors	Title	Code
1515	Zamzul Rizal Zulkifli, Rosta Harun and Lim Kuang Hock	Awaress of behaviours that cause and alleviate global warming and intention to perform the behaviors among Malaysian educated laypeople	P2A-1
1525	Mohd Yusof Saari, Azman Hassan, Tengku Hanidza Tengku Ismail and Nila Fakriah Fahrur Razi	Does trade in industrial products have the potential to improve distribution of global virtual water?	P2A-2
1535	Mariani Ariffin, Theng Hon Watt, Wan Lutfi Wan Johari and Mohamad Shafiq Adnan	Chlorination disinfection byproducts (DBPs): A review of Malaysian drinking water policy and consumers' perception	P2A-3
1545	Muhammad Khairi Kamarudin, Rosta Harun, Aini Jaapar and Zaharah Yahya	Retrofitting as Environmental Hybrid Approach (EHA) in Conservation Works on Historical Buildings in Malaysia.	P2A-4
1555	Nurashida Saad, Ahmad Makmom Abdullah, Hafizan Juahir and Rosta Harun	Contribution Fuel Consumption of Fishing Vessel Operation to Greenhouse Gas Emission	P2A-5
1605	Yuek Ming Ho, Leong Kee Ling and Latifah Abd Manaf	Garbage Enzyme as a Solution to Waste Minimization	P2A-6
1615	Maizatun Mustafa and Mariani Ariffin	A review on environmental forensics and environmental law in the Malaysian Perspective	P2A-7

12th November 2013 (Tuesday) 15:15 – 16:15 Session 2B (Kelantan Room) Theme: Environmental health and risk assessment Chairperson: Assoc. Prof. Dr. Puziah Abdul Latif			
Time	Authors	Title	Code
1515	Yin-Hui Leong, Pui-Nyuk Chiang, Hajjaj Juharullah Jaafar, Chee-Yuen Gan and Mohamed Isa Abdul Majid	Occurrence and dietary intake of polychlorinated dibenzo-p-dioxins and dibenzofurans in Malaysia	P2B-1
1525	Sarva Mangala Praveena, Sarah Abdul Mutalib, Nurul Hafiza Razak, Emilia Zainal Abidin and Ahmad Zaharin Aris	Health Risk Assessment of Heavy Metal Exposure to Classroom Dust in Primary School, Serdang (Malaysia)	P2B-2
1535	Khairul Izzuddin Muhammad, Amir Hamzah Sharaai and Sabrina Ho Abdullah	Life Cycle Assessment for Sawmill Manufacturing at Terengganu, Malaysia	P2B-3
1545	Norhazni Mat Sari and Mazlin Mokhtar	Hazardous Waste Management in Malaysia: the Needs of Environmental Forensic	P2B-4
1555	Ai Yin Sow, Ahmad Ismail and Syaizwan Zahmir Zulkifli	Health Risk from Cu and Zn Contamination through Consumption of Paddy Eel, Monopterus albus	P2B-5
1605	Saliza Mohd Elias, Ana Mardhiah Marzuki, Hilaliyah Mohkhtar, Christopher George, Ahmad Zaharin Aris and Noor Azianti Zakaria	Heavy metals (As, Cd, Cr, and Pb) concentration in freshwater fish and health risk assessment in two areas in Kluang, Johor	P2B-6
1615	Kamsia Budin, Sarva Mangala Praveena and Mahyar Sakari	Health Risk Assessment of Heavy Metals via Consumption of Bivalves Species in Kota Kinabalu, Sabah, Malaysia	P2B-7

12th November 2013 (Tuesday) 15:15 – 16:15 Session 2C (Kuala Lumpur Room) Theme: Environmental health and risk assessment Chairperson: Assoc. Prof. Dr. Wan Nor Azmin Sulaiman			
Time	Authors	Title	Code
1515	Corinthias Pamatang Morgana Sianipar, Gatot Yudoko and Kiyoshi Dowaki	Environmental forensics on Appropriate-Technology-enhanced supply chain of rural commodities	P2C-1
1525	Chuen-Mei Chao, Yi-Ju Chen and Ying-Ming Weng	A Novel Simply Pretreatment Approach for Fast Determination of Multi-residue Pesticides in Aqueous Samples	P2C-2
1535	Susan Codi King	Assessment of water quality in Darwin Harbour using time integrated samplers and biological markers in barramundi (Lates calcifer)	P2C-3
1545	Shaharin Ibrahim, Ahmadreza Ashraf, Elias Saion, Abdul Khalik Wood and Wan Abdullah Wan Yusoff	Weathering Product of Granite as a Possible Source of Strategic Mineral	P2C-4
1555	Prashant P. Bhave and Bisma Shaikh	Noise Pollution Status in Central Mumbai: A Comparative Study	P2C-5
1405	Muhamad Hanif Harif Fadzilah, Jamil Tajam, Mohd Lias Kamal and Norsila Daim	Distribution of Heavy Metals, Organic Matter and Mean Size in Sediment in the Perlis River Estuary	P2C-6
1415	Seyed Reza Hashemi, Mohamad Pauzi Zakaria and Noor Zuhartini Md Muslim	Determination of Polycyclic Aromatic Hydrocarbons (PAHs) in Suspended Solid from Pengkalan Chepa River, Kelantan, Malaysia, based on Weather Condition.	P2C-7

13th November 2013 (Wednesday) 09:00 – 09:45 Keynote Address 3 (Grand Ballroom)
Title: Environmental Geochemical Cycles of Persistent Toxic Substances and Emerging Chemicals of Concern **Prof Wong Ming Hung** Chairperson: Prof. Dr. Mohamad Pauzi Zakaria

13th November 2013 (Wednesday) 10:30 – 12:00 Session 3A (Penang Room) Theme: Characterization, assessment and monitoring Chairperson: Mdm. Rosta Harun			
Time	Authors	Title	Code
1030	Md Pauzi Abdullah, Naghmeh Saadati and Zuriati Zakaria	Organochlorine Pesticides (ocps) in Aquatic Environment of Cameron Highlands, Malaysia	P3A-1
1040	Najat Masood, Mohamad Pauzi Zakaria, Masni Mohd Ali ,Sami M. Magam, Sadeq Alkhadher, Mehrzad Keshavarzifard, Vahab Vaezzadeh and Mudher A. Hussein	Distribution of Petroleum Hydrocarbons in Surface sediments from Selected Locations in Kuala Selangor River, Malaysia	P3A-2
1050	Noorlin Mohamad, Mohd Talib Latif and Md. Firoz Khan	Chemical composition and sources of indoor and outdoor PM10 in primary schools	P3A-3
1100	Nor Rohaizah Jamil, Muhammad Shafiq Ruslan, Mohd Ekhwan Toriman, Mushrifah Idris and Azwin Abdul Razad	Impact of Landuse on Seasonal Water Quality at Highland Lake: A Case Study of Ringlet Lake, Cameron Highlands, Pahang	P3A-4

1110	Mohd Talib Latif, Nur Ili Hamizah Mustaffa, Shoffian Amin Jaafar, Nurul Bahiyah Abd Wahid, Murad Al Salahi, Chong Woan Chian, Wong Sook Han and Masni Mohd Ali	Composition of surfactants from sea-surface microlayer and marine aerosols along the Malacca Straits	P3A-5
1120	Norhayati Mohd. Tahir, Swee Yun Pang, Yii Siang Hii and Bernd R.T. Simoneit	Distribution and sources of Perylene and other Polycyclic Aromatic Hydrocarbons (PAHs) and in South China Sediments off Southern Terengganu Coast, Malaysia	P3A-6
1130	Ahmad Saat, Zaini Hamzah, Ab Khalik Wood, Mahira Talib and Nurulsyuhada Harun	Heavy Metals in Lichen and Moss of a Tea Plantation in Cameron Highlands, Malaysia	P3A-7
1140	Nurzawani Md Sofwan and Sim Siong Fong	Evaluation of Various Water Quality Indices for Water Quality Assessment of Sg. Sarawak	P3A-8
1150	Vahab Vaezzadeh, Mohamad Pauzi Zakaria, Shuhaimi Mustafa, Zelina Zaiton Ibrahim, Aileen Tan Shau-Hwai, Mehrzad Keshavarzifard, Sami Magam and Najat Masood	Distribution of Polycyclic Aromatic Hydrocarbons (PAHs) in Sediment from Muar River and Pulau Merambong, Peninsular Malaysia	P3A-9

13th November 2013 (Wednesday) 10:30 – 12:00
Session 3B (Kelantan Room)
Theme: New approach, rapid assessment and analytical techniques
Chairperson: Dr. Mohd Yusoff Ishak

Time	Authors	Title	Code
1030	Zalina Mohd Ali, Noor Akma Ibrahim, Kerrie Mengersen, Mahendran Shitan, Hafizan Juahir	Discriminant Analysis of Water Quality Data In Langat River	P3B-1
1040	Manutha Appa Rwoo, Hafizan Juahir, Azman Azid, Sharifah Mohd Sharif, Nor Malissa Roslan, Mohd Ekhwan Toriman and Sharifuddin Mohd. Zain	Spatial variations of drinking water quality monitoring in water treatment plant using envirometric techniques	P3B-2
1050	Wan Lutfi Wan Johari, Razlin Izwan Mohd Isa, Norhusna Ghazali and Mohd Yunus Abd Shukor	Decolorization of Azo Dyes by Local Microorganisms	P3B-3
1100	Adewole Moses Bamidele	Impact of poultry manure and ashed sawdust in the phytoextraction of Cadmium and Lead from crude oil contaminated soils	P3B-4
1110	Mohamad Faiz Zainuddin, Zulkifly Abbas, Khairul Nizam Mohamed, Wan Mahmood Mat Yunus and Nurul Huda Osman	Application of a Monopole Sensor for Rapid in-situ Water Quality Assessment: Theoretical Analysis	P3B-5
1120	Mohammed Hatta Abd Karim, Hafizan Juahir and Ahmad Zaharin Aris	A comparative study of groundwater quality of various aquifer systems in Malaysia	P3B-6
1130	Zulfa Hanan Ashaari, Grant Robert Biggand Robert Grant Bryant	Patterns of aerosol over Malaysia from multiple satellite-borne sensors	P3B-7
1140	Tahoora Sheikhy Narany, Mohammad Firuz Ramli, Ahmad Zaharin Aris, Wan Nor Azmin Sulaiman and Kazem Fakharian	Assessment of the potential contamination risk of nitrate in groundwater using indicator kriging (in Amol-Babol Plain, Iran)	P3B-8
1150	Suhaimi Suratman, Hee Yet Yin and Norhayati Mohd Tahir	Spatial and temporal distributions of dissolved organic carbon in the Setiu River, Malaysia	P3B-9

13th November 2013 (Wednesday) 10:30 – 12:00 Session 3C (Kuala Lumpur Room) Theme: Environmental monitoring Chairperson: Mdm. Tengku Hanidza Tengku Ismail			
Time	Authors	Title	Code
1030	Ananthy Retnam, Hafizan Juahir, Mohamad Pauzi Zakaria, Ahmad Zaharin Aris and Mohd Fadhil Kasim	Water quality and enrichment of sedimentary polycyclic aromatic hydrocarbons (PAHs) relation to fish culture in Malaysia	P3C-1
1040	Eddie Cheah Kee Wan and Ferdaus Mohamat Yusuff	Contamiantion of trace elements (Cu, Pb, Cr) in Kong Kong Laut, Johor, Malaysia	P3C-2
1050	Herni Halim and Ramdzani Abdullah	Equivalent Noise Level Response to Number of Vehicles: A Comparison between a High Traffic Flow and Low Traffic Flow Highway in Malaysia	P3C-3
1100	Mande Kato Hosea, Ahmad Makmom Abdullah, Ahmad Zaharin Aris and Ahmad Ainuddin Nuruddin	Soil carbon dioxide efflux and atmospheric impact in a 10 years dipterocarpus recovering lowland tropical forest, Peninsular Malaysia	P3C-4
1110	Hazzeman Haris and Ahmad Zaharin Aris	Mercury distribution in Port Klang mangrove and estuarine sediment	P3C-5
1120	Fatemeh Valizadeh-kakhki, Mohamad Pauzi Zakaria, Ahmad Zaharin Aris, Mehdi Mohamadi and Hassan Tajik	Source discrimination of PAHs in Industrial Soil of the Persian Gulf Coast	P3C-6
1130	Nur Azian Fathiah Adnan and Tengku Hanidza Tengku Ismail	The accumulation of Fe, Pb, Zn, Ni and Cd in *Nerita lineata* and *Thais bitubercularis* obtained from Tanjung Harapan and Teluk Kemang, Malaysia	P3C-7
1140	Mehrzad Keshavarzifard, Mohamad Pauzi Zakaria, Tan Shau Hwai, Normala Halimoon, Shuhaimi Mustafa, Vahab Vaezzadeh, Najat Masood, Sami M. Magam and Chew Weiyun	Polycyclic Aromatic Hydrocarbons (PAHs) in Sediments from Prai and Malacca Rivers, Peninsular Malaysia	P3C-8
1150	Yi-Ta Hsieh, Chin-Ying Kuo, Jyun-Hong Shen and Jao-Jia Horng	News Media and Network Analysis on Hazard Chemical Incidents in Taiwan	P3C-9

13th November 2013 (Wednesday) 14:00 – 14:45 Keynote Address 4 (Grand Ballroom)
Title: Forensic Ecotoxicology **Dr.Tracy Collier** Chairperson: Prof. Dr. Narayanan Kannan

13th November 2013 (Wednesday) 14:45 – 16:00 Session 4A (Penang Room) Theme: Environmental pollution control technology Chairperson: Dr. Faradiella Mohd Kusin			
Time	Authors	Title	Code
1445	Harmin Sulistiyaning Titah, Siti Rozaimah Sheikh Abdullah, Idris Mushrifah, Nurina Anuar, Hassan Basri and Muhammad Mukhlisin	Optimization of Arsenic Phytoremediation by *Ludwigia octovalvis* in Pilot Reed Bed System using Response Surface Methodology	P4A-1
1455	Ipung Fitri Purwanti, Siti Rozaimah Sheikh Abdullah, Mushrifah Idris, Hassan Basri, Ainon Hamzah, Muhammad Mukhlisin and Mohd Talib Latif	Artificial Aeration for Enhancement TPH Degradation in Phytoremediation of Diesel-Contaminated Sand	P4A-2
1505	Israa Abdul Wahab Al-Baldawi, Siti Rozaimah Sheikh Abdullah, Fatihah Suja, Nurina Anuar, Mushrifah Idris	Consortia development of hydrocarbon degrading rhizobacteria isolated from Scirpus grossus in diesel exposure	P4A-3
1515	Wirach Taweepreda and Sineenart Puangmanee	Separation and Characterization of Minerals from Centrifuged Waste Latex Sludge Composition	P4A-4
1525	Norinsafrina Mustaffa Kamal and Shamsul Kamal Sulaiman	Passive Treatment of Acid Mine Drainage with Limestone, Calcareous Rock and Serpentinite	P4A-5
1535	Shamsul Izhar, Mohd Halim Shah Ismail and Lee Yuan Chuan	Removal of Boron and Arsenic from Petrochemical Wastewater Using Zeolite as Adsorbent	P4A-6
1545	In-Ho Yoon, Chong-Hun Jung, Suk Bon Yoon, Chorong Kim, Sang Yoon Park, Jei-Kwon Moon and Wang-Kyu Choi	Evaluation of foam stability in decontamination foam stabilized by silica nanoparticles with nonionic surfactant	P4A-7

13th November 2013 (Wednesday) 14:45 – 16:00 Session 4B (Kelantan Room) Theme: Environmental health and risk assessment Chairperson: Dr. Ferdaus Mohamat Yusuff			
Time	Authors	Title	Code
1445	Eugenie Sin Sing Tan and Najat Al-Odaini	Acute and Chronic Environmental Risk Assessment (ERA) for Pharmaceuticals and in South East Asia	P4B-1
1455	Sarva Mangala Praveena, Nurul Syazani Yuswir, Ahmad Zaharin Aris and Zailina Hashim	Potential Health Risk Assessment of Urban Soil on Heavy Metal Content in Seri Kembangan	P4B-2
1505	Suleiman Alhaji Dauda, Mohd Rusli Yacob and Alias Radam	Heterogeneous Preferences for Domestic Water Quality Service Improvement: A Mixed Logit Approach	P4B-3
1515	Yap Chee Kong and Chew Weiyun	The Invasive Weed, *Asystasiagangetica* as a Biomonitor of Heavy Metal Bioavailability and Pollution	P4B-4
1525	Shadi Kafi Mallak, Mohd Bakri Ishak and Sabrina Abdullah	Exploring the relationship between issues regarding awareness in practicing waste Minimization (Malaysia)	P4B-5
1535	Fatimah Az Zaharah Subahir, Mohd Rusli Yacob and Alias Radam	Consumer Preferences for Biodegradable Shopping Bags in Selected Hypermarkets in Selangor	P4B-6

13th November 2013 (Wednesday) 14:45 – 16:00 Session 4C (Kuala Lumpur Room) Theme: Environmental modelling Chairperson: Assoc. Prof. Dr. Ahmad Makmom Abdullah			
Time	Authors	Title	Code
1445	Negar Banan, Mohd Talib Latif, Liew Juneng and Md. Firoz Khan	An Application of Artificial Neural Networks for the Prediction of Surface Ozone Concentrations in Malaysia	P4C-1
1455	Badriyah Zakaria, Ramdzani Abdullah, Mohammad Firuz Ramli and Puziah Abdul Latif	GIS-Based Site Selection for Hazardous Waste Disposal Facilities In Penang and Kedah	P4C-2
1505	Nor Azrita Mohd Amin, Mohd Bakri Adam and Ahmad Zaharin Aris	Extreme Value Theory for Modeling and Prediction of High PM10 Concentration in Johor	P4C-3
1515	Mohd Yusoff Ishak, Hongqing Cao and Friedrich Recknagel	Predictive Modeling of Chlorophyll a for Tropical Lake by Means of Hybrid Evolutionary Algorithm (HEA)	P4C-4
1525	Caroline Schlegel, Johannes Michaelsen and Michael Heidinger	Identification and Development of different Plumes of chlorinated Hydrocarbons in Groundwater by numerical Modeling based on Carbon isotope Dynamics	P4C-5
1535	Tan Yen Chen and Luqman Chuah Abdullah	Case study: Comparison of Air Dispersion from Solid Waste Incinerator Emission using AERMOD and ISCST3	P4C-6
1545	Norhaniza Amil, Mohd Talib Latif and Md. Firoz Khan	Characterization and Source Apportionment of Fine Particulate Matter during 2011 Haze Episode in UKM Bangi, Malaysia	P4C-7

附件二 開會過程及相關資料照片


UPM
iENFORCE 201
- 13th NOVEMBER 2013 | PUTRAJAYA MARRIOTT HOTEL, PUTRA
VIRONMENTAL FORENSICS RESEARCH CENTRE
CULTY OF ENVIRONMENTAL STUDIES
FROM SOURC
TO SOLUTION

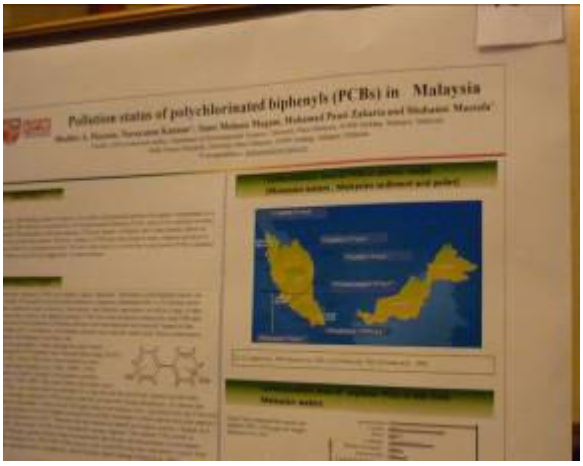

ENVI

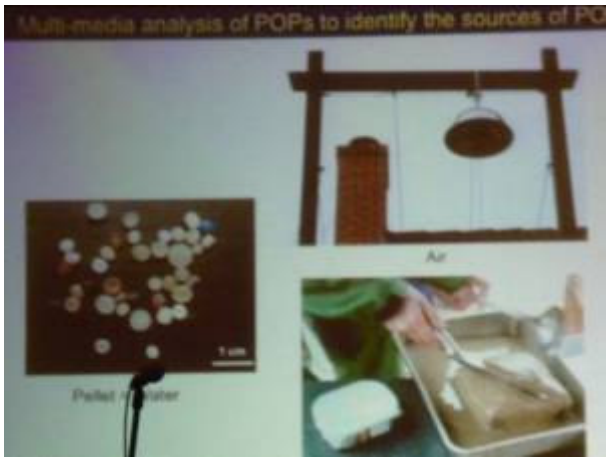

ENFORCE 201

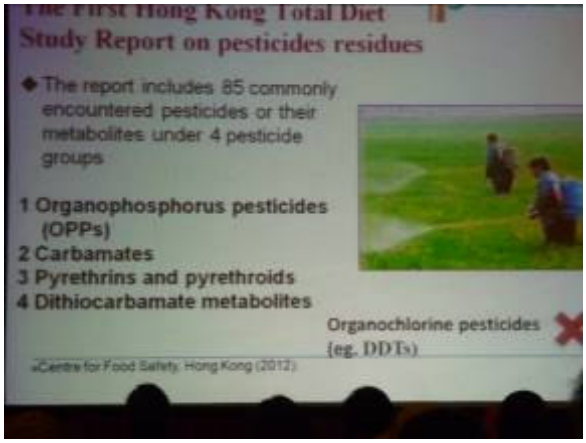

NOVEMBER 2013 | PUTRAJAYA MARRIOTT HO
ITA ORENSICS RESEARCH CENTRE
EN NM TAL S DIES
FRO


UPM
iENFORCE 2013
12th - 13th NOVEMBER 2013 | PUTRAJAYA MARRIOTT HOTEL, PUTRAJAYA
ENVIRONMENTAL FORENSICS RESEARCH CENTRE
FACULTY OF ENVIRONMENTAL STUDIES
FROM SOURCES

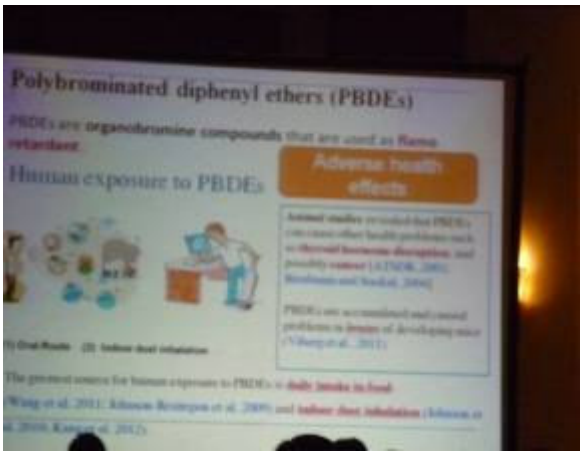

UPM
iENFOR
FROM SOURCES
TO SOLUTIONS


Pollution status of polychlorinated biphenyls (PCBs) in Malaysia


Multi-media analysis of POPs to identify the sources of PC
Air


Study Report on pesticides residues
The report includes 85 commonly encountered pesticides or their metabolites under 4 pesticide groups
1 Organophosphorus pesticides (OPPs)
2 Carbamates
3 Pyrethrins and pyrethroids
4 Dithiocarbamate metabolites
Organochlorine pesticides (eg. DDTs)
Centre for Food Safety, Hong Kong (2012)


tudy Report on MeHg
94.9 %


Polybrominated diphenyl ethers (PBDEs)
Human exposure to PBDEs
Adverse health effects


Open burning
Consumer products
Pathways to Nature
• Directly into the sewage system
• Excreted medicine
-Unmetabolized parent compounds
-Partially metabolized compounds
-Altered compounds
• Unused or unwanted medicines
• Manufacturing metabolites
• Aquatic environment
• Landfill leachate

附件三 口頭論文簡報資料

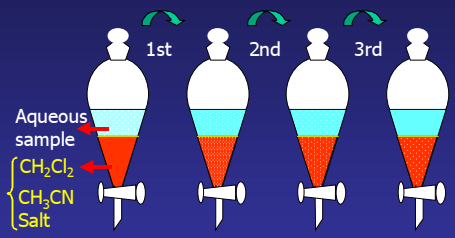
A Novel Simple Pretreatment Approach for Fast Determination of Multi-residue Pesticides in Aqueous Samples

Speaker: Chuen Mei Chao
Environmental Analysis Lab. Taiwan
E-Mail: cmchaw@mail.niea.gov.tw

Outlines

- **Pretreatment method for pesticides in water**
  - --- Liquid–Liquid extraction (LLE) method
  - --- Solid Phase extraction (SPE) method
  - --- Advantages & disadvantages
- **Improved method**
  - --- Modified LLE couple with SLE
- **Results**
- **Conclusion**

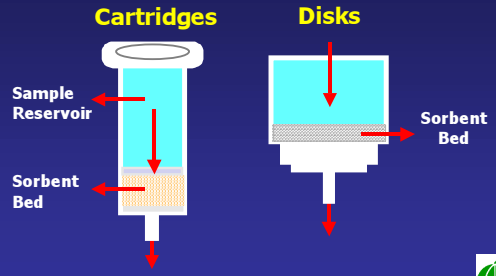
Liquid - Liquid Extraction



Classical method

- **Advantages**
  - -- The simplest principle (partition coefficient)
  - -- Good recoveries for pesticides in water
- **Disadvantages**
  - -- The usage of Large volume organic solvents
  - -- Limited volume samples
  - -- Emulsions formation
  - -- Salting out
  - -- Time and energy waste
  - -- Costly and breakable equipment

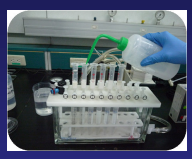
Solid phase extraction (SPE)



Wash/condition ➡ Loading ➡ Washing➡ Elution

11/12/2013 Environmental Analysis Lab.

Manual process




Automatic process

11/12/2013 Environmental Analysis Lab.

Advantages

- -- Small volumes of organic solvents
- -- Large volume of samples
- -- Various SPE adsorbents and bonding phases to select
- -- Multi-sample process simultaneously
- -- No emulsion formation

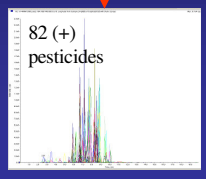
Disadvantages

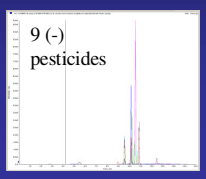
- -- Limitations for multi-residue pesticides extraction from water
- -- Breakthrough volume and salting out
- -- High priced automatic machines

11/12/2013 Environmental Analysis Lab.

LC/MS/MS GC/MS/MS







11/12/2013 Environmental Analysis Lab.

Improved method

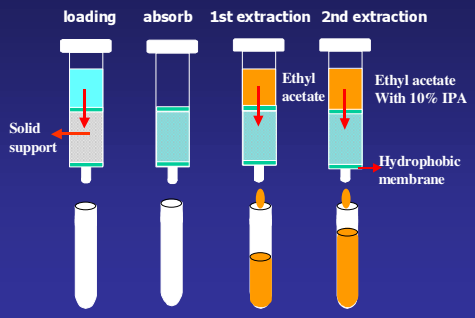
Step1 LLE

Step2 SLE

Vacuum centrifugal evaporator

11/12/2013 Environmental Analysis Lab.

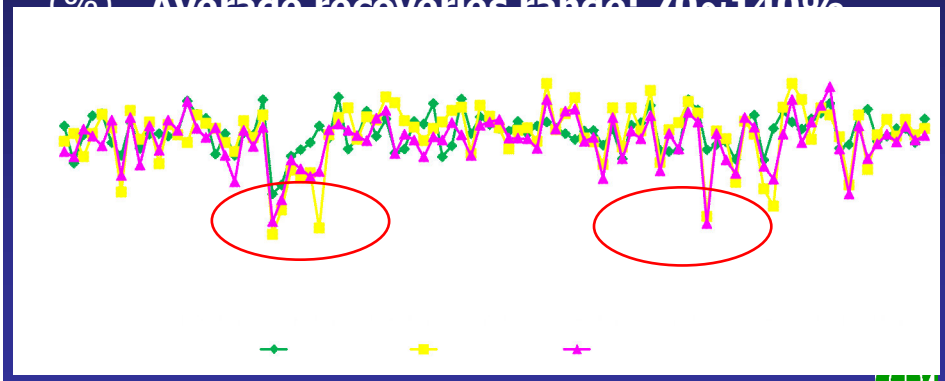
Solid Supportive (diatomaceous earth) Liquid Liquid extraction (SLE)



Environmental Analysis Lab.

15 carbamates, 37 organophosphates, 39 Pesticides (herbicides, fungicides and others)

(%) Average recoveries range: 70~140%



Conclusion

- By coupling modified LLE with SLE, we have developed a useful method for pretreatment of multi-residue pesticides in water.
- In the method, avoiding the sample spurt during LLE extraction is very important.
- In the future experiment, we will test more pesticides and explore the effect of residual chlorine in finished drinking water.

Questions?