



行政院所屬各機關因公出國人員出國報告書
(出國類別：其他)

參與科技發展之國際標準化活動項目 13：

研習消費商品中戴奧辛等環境荷爾蒙之
相關檢驗技術〔參加第 30 屆國際鹵化持久性有機污染
物研討會（2010 年戴奧辛年會）〕出國報告

服務機關：經濟部標準檢驗局

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摘要

現今國際間非常關注於環境荷爾蒙之議題，如聯合國 2004 年「斯德哥爾摩公約」、歐盟 2006 年「危害物質禁限用指令」及「化學物質的登記、評估以及授權管制」等皆將環境荷爾蒙納入管制範圍。在「斯德哥爾摩公約」中，聯合國環境部提出 21 種各國應進行管制的物質，這些屬於持久性有機污染物的物質有持久性、難分解性、生物累積性與高毒性等特徵，因此需嚴加管控。

為了瞭解戴奧辛等此類物質相關研究技術發展，本局乃派員參加第 30 屆國際鹵化持久性有機污染物戴奧辛研討會於美國聖東尼奧市舉行，期程從 9 月 12 日至 17 日。本屆研討會共有 5 場大會演講，以及 35 個主題論文宣讀。發表之論文總數達 627 篇，分成口頭論文發表 260 篇及論文海報展示 367 篇。

在這些環境荷爾蒙或持久性污染物化合物的分析中，本局將來若發展戴奧辛等這類化合物的檢測能量，應評估所需成本與效益。而關於鹵化阻燃劑如何依據國內的情形訂定相關管制及適當檢出限值，為需探討之課題。商用五溴二苯醚之四溴二苯醚、商用八溴二苯醚、六溴聯苯、全氟辛烷磺酸及其鹽類和全氟辛基磺醯氟為「斯德哥爾摩公約」被列管之物質，應進行相關研究調查。2011 年 8 月 21 至 25 日預定於比利時舉行下屆國際鹵化持久性有機污染物研討會，期望將來有機會本局能繼續參與此活動。

壹、目的

行政院於 99 年頒布「消費者保護—推動永續消費」政策綱領，本政策綱領之政策目標為：「企業經營者永續生產」、「消費者永續採購」、「弱勢消費族群權益之維護」、「建立消費者保護之有效管理機制」、「各項安全暨環境友善基礎設施及制度之建制」。其中「建立消費者保護之有效管理機制」之主要行動策略的第 3 點：加強毒性化學物質（含環境荷爾蒙）管理，以及促進其代性物質的發展，即為希望能避免消費者購買到環境不友善（或含有毒性物質）的商品，或因消費產生過多廢棄物及污染排放而影響環境品質，甚而危及未來世代的生存權益。

環境荷爾蒙是指外來干擾生物體內分泌之化學物質，又稱內分泌干擾物，類似於生物體內荷爾蒙，能改變生物體內免疫、神經與內分泌系統之正常運作，可能會引發乳癌和子宮內膜異常增生、前列腺癌及睪丸癌、性發育不正常、降低男性生殖力、腦下垂體及甲狀腺功能改變、免疫力抑制和神經行為作用等。環境荷爾蒙之種類繁多，目前已知至少有 70 種，其中 40 餘種為農藥。種類包括戴奧辛物質、工業用化合物（如 PCB 與烷基酚類）、塑化劑（如鄰二甲苯類 phthalate）、金屬（有機錫與鉛）、殺蟲劑（如 DDT）等。

現今國際間非常關注於環境荷爾蒙之議題，如聯合國 2004 年「斯德哥爾摩公約」、歐盟 2006 年「危害物質禁限用指令」(Restriction of Hazardous Substance, RoHS) 及「化學物質的登記、評估以及授權管制」(Registration, Evaluation, and Authorization of Chemicals, REACH) 等皆將環境荷爾蒙納入管制範圍。尤其是「斯德哥爾摩公約」，聯合國環境部提出 21 種各國應進行管制的物質，這些屬於持久性有機污染物 (Persistent Organic Pollutants, POPs) 的物質有持久性、難分解性、生物累積性與高毒性等特徵，經由大氣傳遞至遠離污染源排放地區，而造成野生動物之危害並於食物鏈中累積。各國應立即採取行動，以減少這些物質在環境中之殘留量，並確保食品之安全。

聯合國列為管控重點 21 種持久性有機污染物，包括阿特靈 (Aldrin)、可氯丹 (Chlordane)、滴滴涕 (4,4-dichlorodiph-enyl trichloroethane, DDT)、地特靈 (Dieldrin)、安特靈 (Endrin)、飛佈達 (Heptachlor)、六氯苯 (Hexachlorobenzene)、滅蟻樂 (Mirex)、毒殺芬 (Toxaphene)、 α -六氯環己烷 (Alpha hexachlorocyclohexane)、 β -六氯環己烷 (Beta hexachlorocyclohexane)、十氯酮 (克敵康, Chlordane)、靈丹 (Lindane)、五氯苯 (Pentachlorobenzene) 等 14 種有機鹵農藥，以及戴奧辛 (Dioxin)、呋喃 (Furans) 及多氯聯苯 (Polychlorinated Biphenyl, PCBs)、商用五溴二苯醚 (C-pentaBDE)、六溴聯苯 (Hexabromobiphenyl)、商用八溴二苯醚

(C-otaBDE)、全氟辛烷磺酸及其鹽類和全氟辛基磺醯氟(Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride)等7種有機鹵工業品和副產品。

Dioxin 20XX 為由 International Advisory Board of the International Symposium on Halogenated POPs 建立的非營利組織，每年舉辦國際戴奧辛研討會。戴奧辛研討會此領域之盛會，為持久性有機污染物科學研究提供開放的公共論壇。從1990年開始舉辦此研討會，今年已為第30年，其領域涵蓋有分析與環境化學、分子生物學、人體健康、風險評估與風險管理等。

為了加速國內消費商品中戴奧辛等環境荷爾蒙相關檢驗系統之建立，本局乃派員參加第30屆國際鹵化持久性有機污染物戴奧辛研討會，期望能瞭解相關檢驗技術並學習國外先進的經驗，以為本局將來可能發展消費商品戴奧辛等環境荷爾蒙相關檢驗系統提供助益。

貳、過程

本次研究調查行程由標準檢驗局第六組林技士雅琳，於 99 年 9 月 11 日至 99 年 9 月 18 日，赴美國參加第 30 屆國際鹵化持久性有機污染物戴奧辛研討會，研習消費商品中戴奧辛等環境荷爾蒙之相關檢驗技術，而本次研究調查的行程資料，如表 1 所示：

表 1、赴美國研習行程表

日期	行程
2010/9/11 (六)	台北→美國聖安東尼
2010/9/12 (日)	參加「國際持久性有機污染物分析全面解答研討會」(Total Solution for POP Analysis Seminar)
2010/9/13 (一) ~ 2010/9/16 (四)	參加「第 30 屆國際鹵化持久性有機污染物辛研討會」(30 th International Symposium on Halogenated Persistent Organic Pollutants)
2010/9/17 (五) 2010/9/18 (六)	美國聖安東尼→台北

國際持久性有機污染物分析全面解答研討會為戴奧辛等前處理設備與分析儀器廠商合辦之技術研討會。舉辦於 9 月 12 日下午，共有 7 個演講，每個演講 20 分鐘。

國際鹵化持久性有機污染物研討會從 9 月 12 日下午開始受理報到，9 月 13 至 16 日為論文及演講發表時間。發表之論文總數達 627 篇，分成口頭論文發表 260 篇及論文海報展示 367 篇。第 1 至 4 天的早上安排 45 分鐘的大會演講。口頭論文發表部分於 5 個場地同時進行，每次簡報為 15 分鐘，接受提問時間為 5 分鐘。論文海報展示於走道與儀器展示場地，作者必須在規定的時間於海報旁接受與會者之提問。儀器展示場地有各種前處理裝置、分析儀器、標準品等廠商參展。與會者於休息時間時可自由地參觀論文海報展示與儀器展示場地。

參、心得

一、第 3 屆國際持久性有機污染物分析全面解答研討會 [3rd International Seminar "Total Solution for POP Analysis: From Rapid Sample Preparation to Comprehensive High Resolution Mass Spectrometric (HRMS) Analysis]

本研討會為為戴奧辛等前處理設備廠商（Fluid Management Systems，FMS）與分析儀器廠商（Thermo Scientific）聯合舉辦之技術研討會。



圖 1、Total-Rapid-Prep 儀器

TRP（Total-Rapid-Prep）為 FMS 公司研發的樣品上機前處理儀器，包括萃取、淨化、濃縮三步驟皆集中於一台機器。這台機器的特點是可以同時進行 6 個樣品的製備，全自動並在數小時內（約 7.1 小時）完成，可運用在檢測 dioxins、PCBs、PAHs、PBDEs 與殺蟲劑的前處理上。



圖 2、DFS - HRGC/HRMS

DFS - HRGC/HRMS為Thermo公司推出的檢測戴奧辛與呔喃的機器。它包括TRACE GC Ultra? gas chromatograph、TriPlus? Autosampler、mass spectrometer部份。可檢測相當低的濃度 ($\ll 100$ fg)、敏感度亦很高 (S/N=200 : 1)。

本研討會上也提出一個新的觀念「POPs Analysis Workflow，持久性有機污染物分析作業流程」，運用”篩選”與”確認”方法來分析POPs。聯合使用高選擇性MS分析技術，以TSQ Quantum XLS (Triple Quadrupole MSMS) 進行快速的篩選，結果若呈現”Negative”，則分析結束；呈現”Positive”則進一步以DFS (Magnetic Sector HRMS) 確認分析。



圖3、Total Solution for POP Analysis研討會相關照片

二、第 30 屆國際持久性有機污染物研討會 (30th International Symposium on Halogenated Persistent Organic Pollutants)

(一) 本屆研討會共有 5 場大會演講，以及 35 個主題論文宣讀。

大會演講：

1. Indoor Exposure to PBDEs and PFCs: You're Not Just What You Eat.
2. Ten Years of PFOS: Past, Present and Future Analytical Trends
3. Omic Examination of the Hepatic Mode of Action of 2,3,7,8-Tetrachlorodibenzo-p-dioxin: A Species Comparison with Risk Assessment Implications
4. Dioxin (PBDD/Fs) in Food ; Living with Regulation
5. International Regulation of POPs: Bridging the Gap Between Science and Policy

論文宣讀：

1. Dioxins and Related Compounds in Diet: Evaluation, Trends, and Risks
2. Disease Risk and TCDD Exposure Estimated from Serum Evaluations
3. Human Exposure to Fluorinated Compounds
4. Dechlorane Plus: A Recently Discovered, High Production Volume Flame Retardant
5. Advances in Analytical, Screening and Confirmatory Methods
6. Environmental Exposure to PCBs - Anniston Community Health Survey (ACHS)/PCBs and Other POPs in Schools and the Workplace
7. Advances in the Toxicology of Dioxins and POPs

8. Brominated Compounds - Fate and Transport
9. Sources of POPs
10. Risk Assessment, Management, and Regulation
11. Epidemiology of POPs
12. Flame-Retardants in a Post-PBDE World
13. Dioxin-Like Compounds in Urban Waterbodies
14. Contaminated Sites: Cases, Remediation, Risk and Policy - Part 1
15. Emission Control
16. POPs in Marine Mammals: Levels, Trends, and Effects
17. Human Exposure to Brominated Compounds
18. Current Issues Regarding Human Health Risks Posed By Dioxin Like Compounds - Part 1
19. POPs in the Environment
20. Environmental Forensics - State of Knowledge in Determining the Sources & Fate of Organohalogen Compounds in the Environment
21. Current Issues Regarding Human Health Risks Posed By Dioxin Like Compounds - Part 2
22. Emerging and Naturally Occurring Compounds in the Environment
23. Sampling Strategies, Preparation and Quality Assurance Aspects of POPs Analysis
24. Toxicology of Brominated and Fluorinated Compounds
25. Human Exposure to Dioxins and PCBs
26. Contaminated Sites: Cases, Remediation, Risk and Policy - Part 2
27. Exposures to Dioxin-Like Compounds in Soil and the Potential Impact on Human Health
28. Developmental Neurotoxicity of PBDEs - Mechanisms to Functional

Consequences

29. New Biological Roles for the Misunderstood Aryl-Hydrocarbon Receptor
30. Fluorinated Compounds - Fate and Transport
31. POPs in Soil and Sediment
32. HBCD Part 1 - Wildlife Toxicology and Exposure
33. HBCD Part 2- Environmental Fate and Distribution
34. Global Fate & Long Range Transport
35. Perfluorinated and Brominated Compounds: Analytical Approaches and Developments

(二) 本次參觀重點為瞭解消費商品中戴奧辛等環境荷爾蒙相關檢驗技術，針對相關主題之重點整理如下：

戴奧辛

Le & Net 研究越南在 1961 到 1971 受到越戰橘劑的影響而有嚴重的戴奧辛污染問題，如今此問題依然存在。在南越的某些區域，土壤與沉積物 (sediment) 的濃度分別是門檻值的 40-50 倍與 18-24 倍。

三氯沙為一種抗菌劑，在醫院中已被使用 40 年作為消毒使用，且今日個人防護產品如抗菌肥皂、洗髮精及防臭劑也常常使用三氯沙。而在污水處理廠、飲用水製造廠及游泳池，在水中常添加氯以達到殺菌效果。最近研究發現在有水、氯、日光的情形下，三氯沙可以轉化為氯仿或是 Polychlorinated Dioxins and Furans (PCDD/Fs) (M. Flournoy et al.)。在西元 2001 年，有 76% 洗手乳含有三氯沙，大部份的三氯沙每日會經由污水處理系統帶走，而其表面水層可能會經過光降解作用，又三氯沙及其含氯衍生物經過光降解作用可形成 di-, tri-, tetra-chlorinated dibenzo-p-dioxins，更是加重對環境的危害。

Sueper 等人調查湖裡沉積物的三氯沙及其氯化衍生物的累積情形，結果顯示三氯沙對於沉積物內 PCDD 濃度有顯著的貢獻，且隨著時間的增加，三氯沙有顯著的增加。

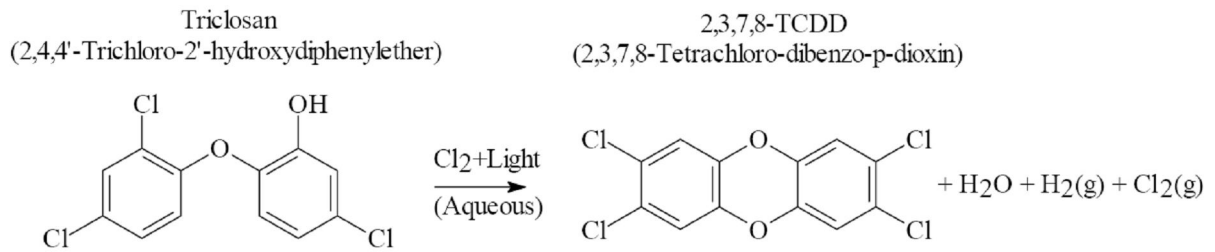


圖 4、三氯沙轉換反應式

多氯聯苯 (Polychlorinated biphenyls, PCB)

Aroclor 1254 為一種商業的多氯聯苯同類混合物，被認為對人類及生態健康有極大危害。在 1977 年被禁止使用之前，這類化學物質過去被使用在變壓器、電容器以及建築材料，如填隙劑、密封劑，而如今建築材料釋放出的 PCBs 仍為人類主要接觸到 PCBs 的來源 (T. Minegishi et al.)。

含溴化合物

有機鹵素物質被人類當作殺蟲劑與火焰阻燃劑使用。其中火焰阻燃劑常被施用於家具中。本次研討會中，鹵化阻燃劑為受到多方注意之物質。它雖然對火災的阻燃有一些幫助，但它所產生的危機似乎大於好處。

在本次會議中，*Blum A.* 等人對於多溴聯苯醚（PBDEs）及其替代品提出了質疑：使用這類物質的好處多過於壞處嗎？結果是否定的，他們研究的結論為：

- (1) 有機鹵火焰阻燃劑會增加火災毒性。添加火焰阻燃劑的泡綿比沒有添加的泡綿延長 2 秒的點火時間，但卻多產生了 5 倍的一氧化碳與 8 倍的煙霧（C. Jayakody et al., 2000）。
- (2) 實際上因阻燃標準（flammability standards）替消防安全帶來的好處以及對健康與環境造成的危害應再思考衡量。Technical Bulletin 117（TB117）是美國加州特有的阻燃標準，要求沙發與幼兒產品中的 Polyurethane（PU）泡綿應可承受開放性的小火苗燃燒至少 12 秒。為了滿足此標準，pentaBDE 是最常被使用的火焰阻燃劑，而 pentaBDE 已在 2003 年因為其持久性與毒性被禁用，且於 2009

年被斯德哥爾摩公約（Stockholm Convention）列入持久性有機污染物質名單。但由於家具的使用壽命長，且這類化學物質的持久性，預期將來這類化學物質還是會由環境進入食物鏈危害人們的健康。

(3) 防火菸、防火蠟燭、兒童安全打火機、灑水器、煙霧偵測器可預防火災而避開火焰阻燃化學物質帶來的潛在危害。減少火源比一味添加火焰阻燃劑有用。

(4) 當這些危害性高或未經評估的火焰阻燃化學物質的危害性被確認後，應考慮其他較安全的替代品，包括使用較不可燃的物質、改變產品設計以減少可燃性、或使用已經危害性評估的安全替代火焰阻燃劑。

此外，Stapleton 等人想瞭解嬰兒產品中火焰阻燃劑添加量的多寡，且產品上貼的 TB117 標誌是否確實標示出產品含有的火焰阻燃劑。他們所檢驗的 101 種嬰兒產品包括汽車座椅、摺疊式嬰兒車、護理枕頭、可換式桌壁、睡眠固定小床墊（sleep positioners）、背兒帶¹，超過 80% 以上的產品含有已知與可辨認的火焰阻燃劑，且大多數為含氯而非含溴的化合物。其中有 36 個樣品中含 tris (1,3-dichloroisopropyl)

phosphate (TCDPP)。這個研究團隊之前也在家具泡綿與屋內粉塵中偵測到 TCDPP (Stapleton HM et al., 2009)。由此推測嬰兒可能比成人對於屋內粉塵的化學物質有更高的曝露量。最近研究顯示 TCDPP 可能影響人體荷爾蒙與繁殖力 (Meeker JD et al., 2010)。其他檢驗出的火焰阻燃劑還有許多種，包括於 2004 年後不用的 PenBDE，以及已知致癌劑 TCEP，其在許多護理枕頭中皆可發現，11 個護理枕頭樣品中就有 9 個被偵測到含 TCEP。

表 2、嬰兒產品之 PU 泡綿中偵測到之化學物質以及出現頻率。

Flame Retardant	# of Detects
PentaBDE	4
TPP, TBB, and TBPH (Components of FM 550/600)	17
Tris (1,3-dichloroisopropyl) phosphate (TDCPP)	36
Tris (2-chloroethyl) phosphate (TCEP)	14
Tris (2-chloro-2-propyl) phosphate (TCPP)	15
Nothing Detected	13
Unidentified Chemicals in Foam	8

除了家具、電機電子產品等外，火焰阻燃劑還出現在美國許多清涼飲料中—溴化蔬菜油 (brominated vegetable oil, BVO, 如溴化大豆油)，其也被用作火焰阻燃劑。德國學者指出這些溴化蔬菜油主要在清涼飲料中扮演溶解傳遞分散者的角色，如此一來它可以增加油的溶解度。BVO 在人體主要儲存在油脂中，在孩童體內的含量比成人來得高。每天消耗 2-4 公升含 BVO 清涼飲料的人會得嚴重的溴中毒，其病徵有頭痛、疲倦、運動失調、記憶損失。目前美國仍使用 BVO，而在日本、

德國已禁止其使用。

含氟化合物

全氟烷化合物是熱穩定性高的合成化學物質，具防水、防油、抗污地效果，可應用於地毯、衣服或紙箱、包裝紙表面防護、不沾鍋，或用於防火原料，在美國最常用的全氟烷化學物是全氟辛酸（perfluorooctanoic acid，PFOA）與全氟辛烷磺酸（PFOS），已被「斯德哥爾摩公約」納為「須限制之物質」。

根據瑞典 Nilsson 等人的研究，目前被人們使用的滑雪蠟主要分為兩種：踢蠟（kick wax）與滑蠟（glide wax）。在市場上販售的大多數滑蠟含有 semifluorinated n-alkanes（SFAs）與 perfluorinated carboxylic acids（PFCAs）。在 150-190°C 下將滑雪蠟溶解包覆滑雪板底部時，會產生含有機氟化合物（organofluorine compounds）的煙霧，這些熔蠟的工人就很容易吸入這些物質。吸入有機氟降解化合物會誘導肺水腫和聚合物煙塵熱，醫學上稱此病症為 Teflon flu。全氟辛酸為在血液內發現的其中一種有機氟形式，其會降低繁殖力及造成荷爾蒙失調等症狀。

關於人體曝露於含氟滑雪蠟之調查，在 12 月到隔年 3 月的滑雪季期間，瑞典與美國國家滑雪隊的 8 位熔滑雪蠟技術工，每一星期約要

進行 30 小時的熔蠟工作。試驗結果顯示，空氣中（8:2 FTOH、PFNA、PFOA_j）及技術工之血液中（PFOA、PFNA、PFDA、PFUnDA、PFOS、PFHxS_j）皆測出有機氟化合物，且在滑雪季後血液中全氟辛酸的含量依然有升高的情形，表示血液對全氟辛酸代謝有一延遲時間。

德國 Weber 等人研究調查發現，杜塞道夫（Dusseldorf-Gerresheim）城市於 2001 年遭受一嚴重的塑膠條板箱儲存倉庫失火事件，此大火是由滅火泡沫熄滅，含有全氟烷化合物（Perfluroalkyl compounds，PFC），包括 PFOS。在經過大火催殘的幾年之後，發現飲用水受到污染，影響人數超過 5 百萬。



圖 5、國際鹵化持久性有機污染物戴奧辛研討會場地



圖 6、國際持久性有機污染物戴奧辛研討會：
論文海報展示場地、儀器展示場地

肆、建議

- 一、戴奧辛等環境荷爾蒙為各國十分關注之議題，我國也已有許多單位機關長期關心本議題，如行政院環保署、衛生署、農委會藥物毒物試驗所等。這些機關關心的領域為環境、食品、人體可能遭受此污染的部分；消費性商品部分也可能有這些環境荷爾蒙或持久性污染物的污染問題，本局亦持續致力於此議題。在這類化合物的分析中，戴奧辛需要高解析度的儀器，建置儀器設備的成本很高，將來若要發展這類化合物的檢測能量，應要仔細評估將來可能獲得之成果效益與所需建置人力、材料、儀器等成本項目。

- 二、消費性產品為本局管轄之範圍，關於鹵化阻燃劑於家具類或相關產品可能含有的情形，如何依據國內的情形執行相關之管制及訂定適當的檢出限值，為需探討之課題。

- 三、商用五溴二苯醚之四溴二苯醚、商用八溴二苯醚、六溴聯苯、全氟辛烷磺酸及其鹽類和全氟辛基磺醯氟這4類於「斯德哥爾摩公約」被列管之物質，目前國內尚未列管，正積極評估是否應予公告列管。為替產品把關，應加快評估的速度，進行相關研究調查工作。

四、 2011 年 8 月 21 至 25 日預定於比利時布魯塞爾 (Belgium Brussels)

舉行第 31 屆國際持久性有機污染物研討會，期望將來本局有機會繼

續參與此活動，相關網址為 <http://www.dioxin2011.org/>。



圖 7、2011 年第 31 屆國際鹵化持久性有機污染物研討會宣傳海報

伍、參考文獻

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5. 第30屆國際持久性有機污染物研討會論文集
6. 網路資料：環境荷爾蒙資訊網<http://www.envi.org.tw/edcs/index.htm>
7. 網路資料：何謂環境荷爾蒙？
<http://teacher.whsh.tc.edu.tw/joy/f2blog/download.php?id=1010>

PROGRAM AT A GLANCE

Monday September 13	Tuesday September 14	Wednesday September 15	Thursday September 16	Friday September 17
ROOM 4 8:00–8:30 OPENING CEREMONY ROOM 4 8:30–9:15 PLENARY <ul style="list-style-type: none"> Inhalation Exposure to PBDEs and PCFCs: You're Not Just What You Eat Tom Webster 	ROOM 4 8:30–9:15 PLENARY <ul style="list-style-type: none"> Ten Years of PFOS: Past, Present and Future Analytical Trends Jon Martin 	ROOM 4 8:30–9:15 PLENARY <ul style="list-style-type: none"> Omic Examination of the Hepatic Mode of Action of 2,3,7,8-Tetrachlorodibenzo-p-dioxin: A Species Comparison with Risk Assessment Implications Tim Zebrowski 	ROOM 4 8:30–9:15 PLENARY <ul style="list-style-type: none"> Dioxins (PBDD/Fs) in Food—Living with Regulation Martin Ross 	ROOM 4 8:30–9:00 COFFEE ROOM 4 9:00–11:30 SPECIAL PROGRAM <ul style="list-style-type: none"> International Regulation of POPs: Bridging the Gap Between Science and Policy Chairs: Laurie Hawes, Martin Scheeringa
EXHIBIT HALL 9:15–9:45 COFFEE BREAK ROOM 1 9:45–12:05 MORNING SESSIONS <ul style="list-style-type: none"> Dioxins and Related Compounds in Diet: Evaluation, Trends, and Risks Human Exposure to Fluorinated Compounds Advances in Analytical, Screening and Confirmatory Methods Advances in the Toxicology of Dioxins and POPs Sources of POPs 	EXHIBIT HALL 9:15–9:45 COFFEE BREAK ROOM 1 9:45–12:05 MORNING SESSIONS <ul style="list-style-type: none"> Epidemiology of POPs Dioxin-Like Compounds in Urban Waterbodies Emission Control Human Exposure to Brominated Compounds POPs in the Environment 	EXHIBIT HALL 9:15–9:45 COFFEE BREAK ROOM 1 9:45–12:05 MORNING SESSIONS <ul style="list-style-type: none"> Current Issues Regarding Human Health Risks Posed By Dioxin-Like Compounds—Part 2 Emerging and Naturally Occurring Compounds in the Environment Sampling Strategies, Preparation and Quality Assurance Aspects of POPs Analysis Toxicology of Brominated and Fluorinated Compounds Human Exposure to Dioxins and PCBs 	EXHIBIT HALL 9:15–9:45 COFFEE BREAK ROOM 1 9:45–12:05 MORNING SESSIONS <ul style="list-style-type: none"> Contaminated Sites: Cases, Remediation, Risk and Policy—Part 2 Developmental Neurotoxicity of PBDEs—Mechanisms to Functional Consequences Fluorinated Compounds—Fate and Transport HBCC Part 1—Wildlife Toxicology and Exposure Global Fate & Long Range Transport 	ROOM 4 9:00–11:30 SPECIAL PROGRAM <ul style="list-style-type: none"> International Regulation of POPs: Bridging the Gap Between Science and Policy Chairs: Laurie Hawes, Martin Scheeringa
EXHIBIT HALL 12:05–13:00 LUNCH BREAK EXHIBIT HALL 12:05–13:00 LUNCH BREAK ROOM 4 12:30–13:00 30TH ANNIVERSARY PHOTO SHOW	EXHIBIT HALL 12:05–13:00 LUNCH BREAK EXHIBIT HALL 12:05–13:00 LUNCH BREAK ROOM 4 12:30–13:00 30TH ANNIVERSARY PHOTO SHOW	EXHIBIT HALL 12:05–13:00 LUNCH BREAK EXHIBIT HALL 12:05–13:00 LUNCH BREAK	EXHIBIT HALL 12:05–13:00 LUNCH BREAK EXHIBIT HALL 12:05–13:00 LUNCH BREAK	ROOM 4 9:00–11:30 SPECIAL PROGRAM <ul style="list-style-type: none"> International Regulation of POPs: Bridging the Gap Between Science and Policy Chairs: Laurie Hawes, Martin Scheeringa
EXHIBIT HALL & FOYER 13:00–14:00 POSTER SESSION ROOM 1 14:00–17:10 AFTERNOON SESSIONS ROOM 1 15:20–15:50 COFFEE BREAK <ul style="list-style-type: none"> Disease Risk and TCDD Exposure Estimated from Serum Evaluations Dechlorane Plus: A Recently Discovered, High Production Volume Flame Retardant Environmental Exposure to PCBs—Amnistion Community Health Survey (ACHS)/PCBs and Other POPs in Schools and the Workplace Brominated Compounds—Fate and Transport Risk Assessment, Management, and Regulation 	EXHIBIT HALL & FOYER 13:00–14:00 POSTER SESSION ROOM 1 14:00–17:10 AFTERNOON SESSIONS ROOM 1 15:20–15:50 COFFEE BREAK <ul style="list-style-type: none"> Flame-Retardants in a Post-PBDE World Contaminated Sites: Cases, Remediation, Risk and Policy—Part 1 POPs in Marine Mammals: Levels, Trends, and Effects Current Issues Regarding Human Health Risks Posed By Dioxin-Like Compounds—Part 1 Environmental Forensics—State of Knowledge in Determining the Sources & Fate of Organohalogen Compounds in the Environment 	EXHIBIT HALL & FOYER 13:00–14:00 POSTER SESSION ROOM 1 14:00–17:10 AFTERNOON SESSIONS ROOM 1 15:20–15:50 COFFEE BREAK <ul style="list-style-type: none"> Exposures to Dioxin-Like Compounds in Soil and the Potential Impact on Human Health New Biological Roles for the Misunderstood Aryl-Hydrocarbon Receptor POPs in Soil and Sediment HBCC Part 2—Environmental Fate and Distribution Perfluorinated and Brominated Compounds: Analytical Approaches and Developments 	EXHIBIT HALL & FOYER 13:00–14:00 POSTER SESSION ROOM 1 14:00–17:10 AFTERNOON SESSIONS ROOM 1 15:20–15:50 COFFEE BREAK <ul style="list-style-type: none"> Exposures to Dioxin-Like Compounds in Soil and the Potential Impact on Human Health New Biological Roles for the Misunderstood Aryl-Hydrocarbon Receptor POPs in Soil and Sediment HBCC Part 2—Environmental Fate and Distribution Perfluorinated and Brominated Compounds: Analytical Approaches and Developments 	ROOM 4 8:30–9:00 COFFEE ROOM 4 9:00–11:30 SPECIAL PROGRAM <ul style="list-style-type: none"> International Regulation of POPs: Bridging the Gap Between Science and Policy Chairs: Laurie Hawes, Martin Scheeringa
ROOM 4 18:00 SYMPOSIUM RECEPTION See Information Section	EXHIBIT HALL & FOYER 18:00 SYMPOSIUM BANQUET See Information Section	EXHIBIT HALL & FOYER 18:00 SYMPOSIUM BANQUET See Information Section	EXHIBIT HALL & FOYER 18:00 SYMPOSIUM BANQUET See Information Section	ROOM 4 8:30–9:00 COFFEE ROOM 4 9:00–11:30 SPECIAL PROGRAM <ul style="list-style-type: none"> International Regulation of POPs: Bridging the Gap Between Science and Policy Chairs: Laurie Hawes, Martin Scheeringa

DAY AT A GLANCE

8:00	OPENING CEREMONY ROOM 4				
	Opening Address Dr. Linda Birnbaum, Director NIEHS				
8:30	PLENARY ROOM 4				
	Indoor Exposure to PBDEs and PFCs: You're Not Just What You Eat Tom Webster				
9:15	COFFEE BREAK EXHIBIT HALL				
9:45	MORNING BREAKOUT SESSIONS SEE PAGES 16–18				
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
	Dioxins and Related Compounds in Diet: Evaluation, Trends, and Risks	Human Exposure to Fluorinated Compounds	Advances in Analytical, Screening and Confirmatory Methods	Advances in the Toxicology of Dioxins and POPs	Sources of POPs
12:05	LUNCH BREAK EXHIBIT HALL				
13:00	POSTER SESSION SEE PAGES 21–25				
	EXHIBIT HALL & FOYER				
14:00	AFTERNOON BREAKOUT SESSIONS SEE PAGES 18–20				
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
	Disease Risk and TCDD Exposure Estimated from Serum Evaluations	Dechlorane Plus: A Recently Discovered, High Production Volume Flame Retardant	Environmental Exposure to PCBs — Anniston Community Health Survey (ACHS)/PCBs and Other POPs in Schools and the Workplace	Brominated Compounds — Fate and Transport	Risk Assessment, Management, and Regulation
15:20	COFFEE BREAK EXHIBIT HALL				
15:50	Disease Risk and TCDD Exposure Estimated from Serum Evaluations	Dechlorane Plus: A Recently Discovered, High Production Volume Flame Retardant	Environmental Exposure to PCBs — Anniston Community Health Survey (ACHS)/PCBs and Other POPs in Schools and the Workplace	Brominated Compounds — Fate and Transport	Risk Assessment, Management, and Regulation
18:00	SYMPOSIUM OPENING RECEPTION at THE INSTITUTE OF TEXAN CULTURES (See Page 12)				

SPONSORED SESSION



9:15–12:05

MORNING BREAKOUT SESSION

ROOM 1

**Dioxins and Related Compounds in Diet:
Evaluation, Trends, and Risks**

Chairs: Lesa Aylward, Janice Huwe

- 9:45** RISK ASSESSMENT: THE SCIENCE THAT UNDERPINS THE REGULATIONS
N.Thatcher **1526**
- 10:05** PCDD/FS AND DL-PCBS IN FOOD SAMPLED IN BADEN-WURTEMBERG BETWEEN 1993 AND 2009 - INFLUENCE OF WHO-TEFS₂₀₀₅, COMPARISON WITH PROPOSED LEGAL LIMITS AND TIME TREND
K.Wahl, R.Malisch, A.Kotz **1190**
- 10:25** NEW AND OLD POPs (PCDD/Fs, PCBs, AND PBDEs) IN U.S. FOODS: LEVELS, TRENDS, AND IMPLICATIONS FOR HUMAN EXPOSURE
J.Huwe **1063**
- 10:45** AN UPDATE TO ESTIMATES OF INTAKE OF DIOXIN-LIKE COMPOUNDS FOR THE GENERAL POPULATION OF THE UNITED STATES
M.Lorber, J.Huwe, D.Rawn **1136**
- 11:05** MIXED HALOGENATED DIOXINS AND BIPHENYLS IN UK FOOD
D.Mortimer, M.Gem, M.Rose, A.Fernandes **1602**
- 11:25** POLYCHLORINATED NAPHTHALENES (PCNs) IN IRISH FOODS: OCCURRENCE AND DIETARY EXPOSURE
C.Tlustos, A.Fernandes **1413**
- 11:45** FAST FOOD CONSUMPTION AND OTHER DIETARY MEASURES PREDICT PFC SERUM CONCENTRATIONS IN THE U.S. POPULATION
T.Webster, J.Nelson, A.Fraser, E.Hatch, M.Scammell **1476**

9:15–12:05

MORNING BREAKOUT SESSION

ROOM 2

Human Exposure to Fluorinated Compounds

Chairs: Don Patterson, Cathrine Thomsen

- 9:45** A TEMPORAL TREND STUDY (1972–2008) OF PERFLUOROOCETANESULFONATE, PERFLUOROHXANESULFONATE, AND PERFLUOROOCETANOATE IN POOLED HUMAN MILK SAMPLES FROM STOCKHOLM, SWEDEN
M.Sundstrom, D.Ehresman, A.Bignert, J.Bothenhoff, G.Olsen, S.Chang, A.Bergman **1126**
- 10:05** ANALYSIS, OCCURRENCE AND RISK OF PERFLUORINATED COMPOUNDS IN BREAST MILK AND COMMERCIAL BABY FOOD
M.Llorca, M.Llorca, M.Farre, Y.Pico, M.Lopez-Teijon, J.Alvarez, D.Barcelo **1019**
- 10:25** DO PERFLUORINATED COMPOUNDS IN DUST FROM NORWEGIAN HOUSES AFFECT THE SERUM LEVELS OF THEIR RESIDENTS?
L.Haug, S.Huber, M.Schlabach, G.Becher, C.Thomsen **1127**
- 10:45** PFCs IN INDOOR OFFICE AIR: CONCENTRATIONS AND CONTRIBUTION TO EXPOSURE
A.Fraser, T.Webster, D.Watkins, J.Nelson, H.Stapleton, A.Calafat, K.Kato, M.Shoeib, V.Vieira, M.McClean **1179**
- 11:05** ABNORMALLY HIGH SERUM LEVELS OF PERFLUOROHXANE SULFONATE (PFHxS) IN A CANADIAN FAMILY — A CASE STUDY.
S.Beesoon, S.Genuis, J.Benskin, J.Martin **1553**
- 11:25** HUMAN EXPOSURE TO FLUORINATED SKI WAX
H.Nilsson, A.Karrman, A.Rotander, B.van Bavel, G.Lindstrom, H.Westberg **1390**
- 11:45** COMPARISON OF PFOS AND PFOA SERUM CONCENTRATIONS IN PEOPLE UNDERGOING REGULAR VENESECTIONS AND IN THE BROADER COMMUNITY
J.Thompson, L.Toms, G.Eaglesham, P.Hobson, J.Mueller **1317**



9:15–12:05

MORNING BREAKOUT SESSION

ROOM 3

Advances in Analytical, Screening and Confirmatory Methods

Chairs: Eric Reiner, Mike Denison

- 9:45** PLE FOR EXTRACTION OF DIOXINS IN ANIMAL FEED AND INGREDIENTS
J.-F.Focant, G.Scholl, E.De Pauw, G.Eppe **1194**
- 10:05** MULTI-RESIDUE METHOD FOR PESTICIDES AND POPS IN MILK AND CREAM USING COMPREHENSIVE TWO DIMENSIONAL GAS CHROMATOGRAPHY TIME-OF-FLIGHT MASS SPECTROMETRY
D.Hayward, T.Pisano, J.Wong, R.Scudder **1061**
- 10:25** NON-TARGET GC/EI-MS SCREENING OF POLYHALOGENATED COMPOUNDS
N.Rosenfelder, N.Van Zee, J.Mueller, C.Gaus, W.Vetter **1424**
- 10:45** REVISED EU-CRITERIA FOR APPLYING BIOANALYTICAL METHODS FOR SCREENING OF FEED AND FOOD FOR DIOXINS AND DIOXIN-LIKE PCBs
R.Hoogenboom, J.Hedrich, G.Eppe, L.Goeyens, M.Eiskens, P.Malagocki, M.Scippo, H.Vanderperren, I.Windal, A.Kotz, M.Denison, R.Malisch **1256**
- 11:05** NEW CUT-OFF VALUES FOR APPLICATIONS IN BIOANALYTICAL SCREENING: DECISION OVER SAMPLE COMPLIANCE WITH LEGAL LIMITS SET BY THE EUROPEAN UNION FOR PCDD/Fs AND DIOXIN-LIKE PCBs
J.Haedrich, G.Eppe, L.Goeyens, R.Hoogenboom, P.Malagocki, M.Scippo, H.Vanderperren, I.Windal, M.Denison, C.Stumpf, A.Kotz, R.Malisch **1383**
- 11:25** APPLICATION OF THE XDS-CALUX BIOASSAY IN ROUTINE: SEMI-QUANTITATIVE SCREENING USING AL-BEQ CUT-OFF VALUES
H.Vanderperren, J.Hedrich, G.Eppe, L.Goeyens, R.Hoogenboom, P.Malagocki, M.Scippo, I.Windal, M.Lekens **1262**
- 11:45** DISCREPANCIES BETWEEN BIO-ANALYTICAL AND CHEMO-ANALYTICAL RESULTS HAVE A NON-NEGLECTIBLE MESSAGE
L.Goeyens, R.Hoogenboom, G.Eppe, P.Malagocki, H.Vanderperren, M.Scippo, I.Windal, W.Baeyens, M.Denison, J.Hedrich **1365**

9:15–12:05

MORNING BREAKOUT SESSION

ROOM 4

Advances in the Toxicology of Dioxins and POPs

Chairs: Bob Budinsky, Steve Safe

- 9:45** PKC SIGNALING PATHWAY MODULATES TCDD-INDUCED APOPTOSIS OF ARTICULAR CHONDROCYTES
H.Lee, S.Song, M.Jin, J.Yang **1028**
- 10:05** CO-EXPOSURE TO METHYLMERCURY AND PCBs INCREASES ACCUMULATION OF PCBs IN THE BRAINS OF OFFSPRING MICE
M.Shimada, T.Nakamura, N.Sugawara, K.Yaginuma, N.Tatsuta, N.Kurokawa, K.Nakai, H.Satoh **1102**
- 10:25** GENOMIC ANALYSIS OF HUMAN KERATINOCYTES IDENTIFIES BROAD EFFECTS OF DIOXIN ON GENES REQUIRED FOR EPIDERMAL BARRIER FORMATION
T.Sutter, S.Bodreddigari, Q.Tran, C.Campion, S.Goodwin, C.Sutter **1545**
- 10:45** CYP1A1 INDUCTION IN LYMPHOCYTES FROM MICE AND HUMANS: A BIOMARKER OF DIOXIN EXPOSURE?
M.van Duursen, K.van Ede, M.van den Berg **1395**
- 11:05** TCDD INDUCES BIOMARKERS FOR ENDOMETRIOSIS IN RAT ENDOMETRIUM AND HUMAN ECC-1 CELLS
K.van Ede, S.Stelloo, M.van den Berg, M.van Duursen **1400**
- 11:25** INHIBITORY MECHANISMS OF TYROSINE KINASE INHIBITORS, HERBIMYCIN A, AND TYRPHOSTIN COMPOUNDS ON THE FUNCTION OF ARL HYDROCARBON RECEPTOR IN CACO-2 CELLS
S.Kasai, H.Kikuchi **1042**
- 11:45** THE TOXICOKINETICS OF VARIOUS PERFLUORINATED ALKYL CHEMICALS IN MALE AND FEMALE HARLAN SPRAGUE DAWLEY RATS
C.Blystone, V.Robinson, C.Smith, R.Melnick, K.Thayer, M.DeVito **1404**

9:15–12:05
MORNING BREAKOUT SESSION

ROOM 5

Sources of POPs

Chairs: Georg Becher, Neeta Thacker

- 9:45** EMISSION FACTORS FOR PCDD/PCDF FROM FOREST AND CROP FIRES - REVISION OF CATEGORY 6a OF THE UNEP TOOLKIT
J.Mueller, R.Black, M.Meyer, D.Toutai, B.Gullett, H.Fiedler **1308**
- 10:05** FORMATION AND DEGRADATION OF DIOXINS IN AN INCINERATION PROCESS, AND THE ROLE OF SURROGATE COMPOUND MONITORING
K.Kawamoto, I.Yoda, H.Miyata **1117**
- 10:25** DIOXIN AND FURAN IN WASTE INCINERATIONS AND THERMAL PROCESSES
N.Thacker, S.Kashyap, J.Trivedi, B.Thokchom, A.Agnihotri **1185**
- 10:45** EMISSION OF PCDD/FS AND DL-PCBS FROM PIGEON PROCESS OF MAGNESIUM SMELTING
Z.Nie, M.Zheng, W.Liu, B.Zhang, C.Wang, G.Liu, P.Lv, K.Xiao **1143**
- 11:05** PCDD/F, PCB AND HCB EMISSIONS FROM ARTISANAL BRICK PRODUCTION IN DEVELOPING COUNTRIES — A CASE STUDY IN MEXICO
P.Maiz, G.Umlauf, G.Mariani, H.Skejo, B.Cardenas, A.Grochowalski **1574**
- 11:25** DIOXIN IN VIETNAM
L.Thi hai Le **1110**
- 11:45** SOURCES OF HIGH 6-HYDROXY BDE-47 LEVELS IN CALIFORNIA CATS: METABOLISM OR DIET?
J.-S.Park, W.Guo, Y.Wang, S.Gardner, C.Baek, K.Hooper, M.Petreas **1123**

14:00–17:10
AFTERNOON BREAKOUT SESSION

ROOM 1

Disease Risk and TCDD Exposure Estimated from Serum Evaluations

Chairs: Marian Pavuk, Joe DiGangi

- 14:00** THE RANCH HAND STUDY: LESSONS LEARNED
J.Michalek **1276**
- 14:20** MORTALITY RATES AMONG WORKERS EXPOSED TO 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN AT A TRICHLOROPHENOL PLANT IN NEW ZEALAND
D.McBride, J.Collins, P.Herbison, K.Bodner, L.Aylward, M.Wilken **1138**
- 14:40** PLASMA DIOXIN LEVELS AND CAUSE-SPECIFIC MORTALITY IN AN OCCUPATIONAL COHORT OF WORKERS EXPOSED TO CHLOROPHENOXY HERBICIDES, CHLOROPHENOLS AND CONTAMINANTS
D.Boers, L.Portengen, W.Turner, B.Bueno-de-Mesquita, D.Heederik, R.Vermeulen **1660**
- 15:00** MODELLING OF HISTORICAL 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN EXPOSURE IN A COHORT OF WORKERS EXPOSED TO CHLOROPHENOXY HERBICIDES, CHLOROPHENOLS AND CONTAMINANTS
D.Boers, L.Portegen, W.Turner, H.Bueno-de-Mesquita, D.Heederik, R.Vermeulen **1059**
- 15:20** **Coffee Break**
- 15:50** DEATH RATES FOR TRICHLOROPHENOL AND PENTACHLOROPHENOL WORKERS WITH DIOXIN EXPOSURES IN MIDLAND, MICHIGAN
J.Collins, K.Bodner, L.Aylward, C.Bodnar, M.Wilken **1147**
- 16:10** CANCER INCIDENCE AND MORTALITY IN THE POPULATION EXPOSED TO DIOXIN AFTER THE "SEVESO", ITALY, ACCIDENT
A.Pesatori, D.Consonni, P.Bertazzi **1146**
- 16:30** DIOXINS AND PCBS AMONG RUSSIAN BOYS: PREDICTORS OF SERUM LEVELS AND ASSOCIATIONS WITH CHILDHOOD GROWTH
J.Burns, P.Williams, O.Sergeyev, S.Korrick, M.Lee, B.Revich, L.Altshul, D.Patterson, J.Del Prato, O.Humblet, R.Hauser **1214**
- 16:50** SERUM DIOXIN CONCENTRATIONS AND BREAST CANCER RISK IN THE SEVESO WOMEN'S HEALTH STUDY
M.Warner, B.Eskenazi, S.Samuels, L.Needham, D.Patterson, P.Brambilla, P.Mocarelli **1036**



SPONSORED SESSION



14:00–17:10

AFTERNOON BREAKOUT SESSION

ROOM 2

Dechlorane Plus: A Recently Discovered, High Production Volume Flame Retardant

Chairs: Ron Hites, Ed Sverko

- 14:00** DECHLORANE PLUS IN GREAT LAKES AIR
R.A.Hites, A.Salamova, M.Venier **1177**
- 14:20** DECHLORANE PLUS AND RELATED COMPOUNDS IN SPANISH AIR
A.de la Torre, G.Pacepavicius, L.Shen, E.Reiner, B.Jimenez, M.Alaaee, M.Martinez **1352**
- 14:40** LARGE-SCALE DISTRIBUTION AND TRANSPORT OF DECHLORANE PLUS IN AIR AND SEAWATER OF THE NORTHERN AND SOUTHERN ATLANTIC OCEAN
A.Moeller, Z.Xie, R.Sturm, R.Ebinghaus **1268**
- 15:00** ISOMERS OF DECHLORANE PLUS IN THE EGGS OF FOUR SPECIES OF GULLS (LARIDS) FROM COLONIES ACROSS CANADA AND THE INFLUENCE OF DIET ON SPATIAL DISTRIBUTION
R.Letcher, N.Burgess, L.Champoux, J.Elliott, C.Hebert, P.Martin, M.Wayland, C.Weseloh, L.Wilson **1523**
- 15:20** **Coffee Break**
- 15:50** DECHLORANE PLUS AND POSSIBLE ENVIRONMENTAL METABOLITES IN WHITE STORK EGGS
J.Munoz-Arnanz, M.Saez, G.Pacepavicius, M.Alaaee, B.Jimenez **1354**
- 16:10** TEMPORAL TRENDS OF DECHLORANE 602, 603 AND 604 IN NIAGARA RIVER SUSPENDED SEDIMENT AND LAKE ONTARIO LAKE TROUT
L.Shen, E.Reiner, K.MacPherson, T.Kolic, P.Helm, I.Brindle, C.Marvin, S.Backus, M.Whittle, G.Tomy **1489**
- 16:30** LEVELS AND ISOMER PROFILES OF DECHLORANE PLUS IN SURFACE SOILS FROM E-WASTE RECYCLING AREAS AND INDUSTRIAL AREAS IN SOUTH CHINA
Z.Yu, Z.Yu, S.Gao, H.Li, J.Wang, G.Sheng, J.Fu **1286**
- 16:50** OCCURRENCE OF DECHLORANE IN A WASTEWATER TREATMENT PLANT OF NORTHEAST CHINA
H.Qi, L.Liu, N.Ren, E.Sverko, J.Huang, X.Shen, H.Jia, E.Reiner, L.Shen, Y.Li **1484**

14:00–17:10

AFTERNOON BREAKOUT SESSION

ROOM 3

Environmental Exposure to PCBs — Anniston Community Health Survey (ACHS)

Chairs: Allen Silverstone, Linda Birnbaum

PCBs and Other POPs in Schools and the Workplace

Chairs: Gary Hunt, Niklas Johansson

- 14:00** SPATIAL DISTRIBUTION AND DETERMINANTS OF PCB CONTAMINATION IN RESIDENTIAL SOIL IN ANNISTON, ALABAMA
J.Olson, H.Ha, L.Bian, P.Rogerson, M.Pavuk **1449**
- 14:20** PREDICTORS OF HUMAN SERUM POLYCHLORINATED BIPHENYLS (PCBS) CONCENTRATIONS IN THE ANNISTON COMMUNITY HEALTH SURVEY
M.Pavuk, J.Olson, A.Sjodin, W.Wattigney, R.Foushee, S.Dearwent, W.Turner, D.Patterson **1292**
- 14:40** ASSOCIATIONS BETWEEN BLOOD PRESSURE AND SERUM LEVELS OF PCB CONGENERS AND CHLORINATED PESTICIDES
M.Pavuk, A.Goncharov, R.Foushee, D.Carpenter **1281**
- 15:00** METABOLIC SYNDROME AND PESTICIDE EXPOSURE IN THE ANNISTON COMMUNITY HEALTH SURVEY
P.Rosenbaum, A.Silverstone, R.Weinstock, M.Pavuk **1293**
- 15:20** **Coffee Break**
- 15:50** NEW ORDINANCE ON PCB IN SWEDEN AND FOLLOW-UP OF THE IDENTIFICATION AND DECONTAMINATION OF PCB-CONTAINING BUILDINGS
N.Johansson **1227**
- 16:10** PERFLUOROALKYL COMPOUNDS IN INDOOR DUST FROM UK CARS, CLASSROOMS, HOMES, AND OFFICES: AN ASSESSMENT OF UK EXPOSURE VIA DUST INGESTION
S.Harrad, E.Goosey **1025**
- 16:30** POST-REMEDIATION INDOOR AIR AND SUB-SLAB PASSIVE VENTING SYSTEM POLYCHLORINATED BIPHENYL (PCB) AND VOLATILE ORGANIC COMPOUND (VOC) SAMPLING AT A NEW ENGLAND SCHOOL BUILDING CONSTRUCTED AT A BROWNFIELDS SITE.
D.Sullivan, G.Hunt **1483**
- 16:50** PCBs IN BUILDING MATERIALS - CAULK
T.Simons **1161**

14:00–17:10

AFTERNOON BREAKOUT SESSION

ROOM 4

Brominated Compounds — Fate and Transport

Chairs: Stuart Harrad, Miriam Diamond

- 14:00** ATMOSPHERIC DEPOSITION AND BIOACCUMULATION OF SELECTED HALOGENATED ORGANICS IN REMOTE LAKES AND IN THE GREAT LAKES
D.Muir, C.Teixeira, J.Epp, T.Young, X.Wang, F.Yang, S.Backus, C.Marvin, E.Reiner **1566**
- 14:20** FATE OF PBDES IN LAKE TROUT ACROSS CANADA
S.Gewurtz, D.McGoldrick, M.Clark, M.Keir, M.Gledhill, M.Sekela, J.Syrgiannis, M.Evans, A.Armellin, J.Pomeroy, S.Backus **1438**
- 14:40** TEMPORAL TRENDS OF HEXABROMOCYCLODODECANES IN URBAN, RURAL, AND REMOTE LAKES IN SWITZERLAND
C.Bogdal, P.Schmid, N.Bluthgen, M.Zennegg, F.Anselmetti, M.Kohler, N.Heeb, M.Scheringer, K.Hungerbuhler **1145**
- 15:00** CONTAMINATION STATUS OF POLYCHLORINATED BIPHENYLS AND POLYBROMINATED DIPHENYL ETHERS IN FISH AND SHELLFISH COLLECTED FROM COASTAL WATERS OF SURABAYA CITY, INDONESIA
M.Ilyas, A.Sudaryanto, I.Setiawan, A.Riyadi, T.Isobe, S.Takashashi, S.Tanabe **1067**
- 15:20** **Coffee Break**
- 15:50** BIOACCUMULATION OF POLYBROMINATED DIPHENYL ETHERS (PBDES) AND SEVERAL NON-PBDE FRs IN WATERBIRDS FROM AN E-WASTE RECYCLING REGION IN SOUTH CHINA
X.-J.Luo, X.Zhang, S.Cheng, B.Mai **1217**
- 16:10** SPECIES-SPECIFIC DIFFERENCES AND STRUCTURE-ACTIVITY RELATIONSHIPS IN THE DEBROMINATION OF PBDE CONGENERS AMONG THREE FISH SPECIES
S.Roberts, P.Noyes, E.Gallagher, H.Stapleton **1149**
- 16:30** HBCD ISOMERS: DEGRADATION RATES AND HYDROXYLATED PRODUCTS FROM MICROSOME INCUBATION EXPERIMENTS
R.Becker, S.Esslinger, I.Nehls **1113**
- 16:50** INFLUENCE OF CHEMICAL DEGRADATION KINETIC PARAMETERS ON THE TOTAL DEBROMINATION OF PBDES IN A LANDFILL SYSTEM
M.Danon-Schaffer, A.Mahecha-Botero **1041**

14:00–17:10

AFTERNOON BREAKOUT SESSION

ROOM 5

Risk Assessment, Management, and Regulation

Chairs: Mark Harris, Gary Perdew

- 14:00** DIFFERENT EFFECTS OF ORGANOCHLORINE COMPOUNDS IN CONCENTRATIONS ON WHOLE AND LIPID WEIGHT BASES ON HUMAN HEALTH
J.Nagayama **1089**
- 14:20** USING HUMAN IN VIVO AHR ACTIVATION AS A FUNCTIONAL DOSE METRIC FOR RISK ASSESSMENT BASED ON CHLORACNE, EFFECTS IN KERATINOCYTES AND BACKGROUND CYP INDUCTION
T.Simon **1226**
- 14:40** DIOXINS IN CLAY PRODUCTS USED DURING PREGNANCY
R.Hoogenboom, A.Talidda, M.Zeilmaker, N.Reeuwijk, W.Traag **1255**
- 15:00** PBDES AND THEIR REPLACEMENTS: DOES THE BENEFIT JUSTIFY THE HARM?
A.Blum, S.Shaw, L.Birnbaum **1493**
- 15:20** **Coffee Break**
- 15:50** DIOXINS AND PCB IN SALMON FROM THE SOUTHERN BALTIC SEA AND REDUCTION IN LEVELS DURING PROCESSING
T.L.Cederberg, M.Timm-Heinrich, S.Sorensen, K.Lund **1542**
- 16:10** REGULATORY CONSEQUENCES OF PROPOSED STATE ADOPTION OF HIGH-END SUBSISTENCE FISH CONSUMPTION RATES AT SEDIMENT DIOXIN REMEDIATION SITES IN THE PACIFIC NORTHWEST
S.Ellis, R.Stuart, C.Whitmus **1032**
- 16:30** WHO/UNEP-COORDINATED EXPOSURE STUDY (2008-2009) ON LEVELS OF PERSISTENT ORGANIC POLLUTANTS (POPs) IN HUMAN MILK WITH REGARD TO THE GLOBAL MONITORING PLAN
R.Malisch, K.Kypke, A.Kotz, K.Wahl, N.Bitomsky, G.Moy, S.Park, A.Tritscher, S.Yong Lee, K.Magulova, H.Fiedler **1684**
- 16:50** PBDEs AS "NEW POPs" - CHALLENGES AND KNOWLEDGE GAPS OF CONTROLLING PBDEs UNDER THE STOCKHOLM CONVENTION
R.Weber, A.Watson, T.Webster **1567**



DAY AT A GLANCE

8:30	PLENARY ROOM 4				
	Ten Years of PFOS: Past, Present and Future Analytical Trends Jon Martin				
9:15	COFFEE BREAK EXHIBIT HALL				
9:45	MORNING BREAKOUT SESSIONS SEE PAGES 28–30				
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
	Epidemiology of POPs	Dioxin-Like Compounds in Urban Waterbodies	Emission Control	Human Exposure to Brominated Compounds	POPs in the Environment
12:05	LUNCH BREAK EXHIBIT HALL				
12:30	30TH ANNIVERSARY PHOTO SHOW ROOM 4				
13:00	POSTER SESSION SEE PAGES 33–37				
	EXHIBIT HALL & FOYER				
14:00	AFTERNOON BREAKOUT SESSIONS SEE PAGES 30–32				
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
	Flame-Retardants in a Post- PBDE World	Contaminated Sites: Cases, Remediation, Risk and Policy — Part 1	POPs in Marine Mammals: Levels, Trends, and Effects	Current Issues Regarding Human Health Risks Posed By Dioxin Like Compounds — Part 1	Environmental Forensics — State of Knowledge in Determining the Sources & Fate of Organohalogen Compounds in the Environment
15:20	COFFEE BREAK EXHIBIT HALL				
15:50	Flame-Retardants in a Post- PBDE World	Contaminated Sites: Cases, Remediation, Risk and Policy — Part 1	POPs in Marine Mammals: Levels, Trends, and Effects	Current Issues Regarding Human Health Risks Posed By Dioxin Like Compounds — Part 1	Environmental Forensics — State of Knowledge in Determining the Sources & Fate of Organohalogen Compounds in the Environment

9:15–12:05

MORNING BREAKOUT SESSION

ROOM 1

Epidemiology of POPs

Chairs: Lizbeth López-Carrillo, Belinda Hawkins

- 9:45** ASSOCIATIONS OF PCB EXPOSURE AND ENDOGENOUS HORMONES WITH HISTORY OF DIABETES IN POSTMENOPAUSAL WOMEN PREVIOUSLY EMPLOYED AT A CAPACITOR MANUFACTURING PLANT
V.Persky, J.Piorkowski, M.Turyk, S.Freels, R.Chatterton, J.Dimos, H.Bradlow, L.Kaatz Chary, V.Burse, T.Unterman, D.Sepkovic, K.McCann **1294**
- 10:05** CHRONIC DIOXIN EXPOSURE AND INCREASED RISK OF OSTEOPOROSIS
S.-L.Wang, S.Lee, C.Liao, B.Lee, S.Chang, H.Chen, C.Tsai **1551**
- 10:25** OVERVIEW OF SOME RECENT PFOA RESEARCH IN THE MID-OHIO VALLEY CONDUCTED BY THE C8 SCIENCE PANEL
K.Steenland **1073**
- 10:45** PUBERTY IN GIRLS IN RELATION TO SERUM BIOMARKERS OF PERSISTENT ORGANIC POLLUTANTS
G.Windham, S.Pinney, R.Lum, A.Sjodin, F.Biro, L.Needham, R.Hiatt, L.Kushi **1565**
- 11:05** SERUM DIOXIN CONCENTRATIONS AND BONE MINERAL DENSITY IN THE SEVESO WOMEN'S HEALTH STUDY
B.Eskenazi, M.Warner, T.Fuerst, A.Rubinacci, M.Sirtori, L.Needham, P.Brambilla, P.Mocarelli **1024**
- 11:25** SYSTEMIC STUDY ON ASSOCIATION BETWEEN BREAST CANCER AND DIOXIN
F.-C.Sung, W.Ho, J.Chen, Y.Lin, C.Lin, I.Chen, M.Lin, S.Pan **1174**
- 11:45** THYROID HORMONES AND EXPOSURE TO PCBs AND DDE: A STUDY OF GREAT LAKES SPORT FISH CONSUMERS IN 1994-1995 AND 2004-2005
M.Turyk, L.Yi, V.Persky, S.Freels, R.Chatterton, J.Lynda, K.Henry **1271**

9:15–12:05

MORNING BREAKOUT SESSION

ROOM 2

Dioxin-Like Compounds in Urban Waterbodies

Chairs: Hanadi Rifai, Robin Brinkmeyer

- 9:45** COMPARATIVE DISTRIBUTION, SOURCING, AND CHEMICAL BEHAVIOR OF PCDD/FS AND PCBs IN AN ESTUARY ENVIRONMENT
N.Howell, H.Rifai **1656**
- 10:05** ROLE OF BLACK CARBON AND AMORPHOUS ORGANIC CARBON ON THE PARTITION OF DIOXINA AND OTHER HYDROPHOBIC ORGANIC CONTAMINANTS IN SEDIMENTS OF THE SAN JACINTO SUPER FUND SITE, HOUSTON SHIP CHANNEL
P.Louchouart, S.Seward, R.Brinkmeyer, G.Cornelissen, K.Yeager, P.Santschi **1677**
- 10:25** EVALUATION OF POLYCHLORINATED NAPHTHALENES (PCNS) IN NEWARK BAY SEDIMENT
J.Urban, B.Burkhalter, A.Tachovsky, L.Haws, M.Harris **1437**
- 10:45** BIOACCUMULATION OF DIOXINS AND PCBs IN FISH TISSUE IN AN URBAN ESTUARY
H.Rifai, N.Howell, D.Lakshmanan **1674**
- 11:05** FACTORS INFLUENCING MICROBIAL DEGRADATION OF DIOXINS IN THE HOUSTON SHIP CHANNEL AND GALVESTON BAY, TEXAS
R.Brinkmeyer, A.Hieke-Rambo, S.Zhang, C.Xu, K.Schindler, P.Louchouart, K.Yeager, P.Santschi **1670**
- 11:25** RECONSTRUCTING HISTORICAL DIOXIN CONTAMINATION IN THE HOUSTON SHIP CHANNEL AND GALVESTON BAY, TEXAS BY SEDIMENT RADIO-DATING
K.Yeager, P.Louchouart, R.Brinkmeyer, P.Santschi, K.Schindler **1666**
- 11:45** DIOXIN AND PCB TMDLS IN THE HOUSTON SHIP CHANNEL AND GALVESTON BAY SYSTEM: WHERE AND WHY
L.Koenig **1672**



9:15–12:05

MORNING BREAKOUT SESSION

ROOM 3

Emission Control

Chairs: Stina Jansson, Jay Silkworth

- 9:45 PCDD/PCDF EMISSIONS OF MODERN DIESEL DIRECT INJECTION POWERTRAINS AND THEIR AFTERTREATMENT SYSTEM
A. Hovemann, W. Steeg, H. Rabl, M. Bock, M. Helm, A. Pfaffinger **1285**
- 10:05 POLYCHLORINATED DIBENZO-P-DIOXIN AND DIBENZOFURAN EMISSIONS FROM THE STARTING-UP AND NORMAL OPERATION OF A HAZARDOUS WASTE INCINERATOR IN CHINA
S. Lu, Y. Yan, X. Li, X. Jiang, H. Wu **1021**
- 10:25 PREDICTION OR DETECTION OF I-TEQ EMISSION FROM PCDD/F CONGENERS, PCBS AND PROCESS PARAMETERS IN A WTE PLANT
M. Brugioni, D. Cissokho, J. de Freitas **1094**
- 10:45 CHARACTERISTICS OF PCDD/F FORMATION IN THE SECONDARY COPPER SMELTING PROCESS
P.-C. Hung, M. Chang, S. Chang **1385**
- 11:05 APPLICATION OF MULTI-LAYER MOVING BED REACTOR FOR REMOVING PCDD/F FROM SINTERING PROCESS
M.-B. Chang, P. Hung, K. Chi **1386**
- 11:25 ENVIRONMENTAL AND ECONOMIC STUDY ON DIOXIN REDUCTION DURING CEMENT PRODUCTION IN A NEW DRY CEMENT ROTARY KILN
P. Zheng, D. Qiong, J. Chen, G. Xinhua, W. Lan **1527**
- 11:45 LOW-TEMPERATURE DEGRADATION OF POLYCHLORINATED BIPHENYLS USING ACTIVATED CARBON-SUPPORTED TRANSITION METALS
Y. Sun, C. Wang, T. Zhu **1452**

9:15–12:05

MORNING BREAKOUT SESSION

ROOM 4

Human Exposure to Brominated Compounds

Chairs: Jochen Müller, Yasuhiro Hirai

- 9:45 TRANSFER OF POLYBROMINATED DIPHENYLETERS (PBDES) FROM MOTHER TO CHILD
J. Fang, K. Jakobsson, M. Athanasiadou, A. Rignell-Hydbom, A. Bergman **1539**
- 10:05 EXPOSURE TO PBDES IN OFFICES: CONNECTING DUST, HANDWIPES, AND SERUM
D. Watkins, M. McClean, A. Fraser, H. Stapleton, A. Sjödin, T. Webster **1298**
- 10:25 COMPARISONS OF PBDE AND HBCD CONCENTRATIONS IN DUST COLLECTED BY TWO DIFFERENT SAMPLING METHODS AND THEIR ASSOCIATION TO HUMAN BREAST MILK CONCENTRATIONS
J. Bjorklund, U. Sellstrom, C. de Wit, M. Aune, S. Lignell, P. Darnerud **1202**
- 10:45 PERSISTENT ORGANIC POLLUTANTS IN CHILDREN WORKING AND LIVING AT URBAN WASTE DISPOSAL SITES IN NICARAGUA AND BANGLADESH
L. Linderholm, M. Athanasiadou, K. Jakobsson, A. Bergman **1394**
- 11:05 ASSESSMENT OF HUMAN EXPOSURE TO POLYCHLORINATED BIPHENYLS AND BROMINATED FLAME RETARDANTS IN INDIA
D. Gnanasekaran, A. Babu, A. Sudaryanto, T. Isobe, K. Asante, A. Subramanian, S. Takashashi, S. Tanabe **1066**
- 11:25 POLYBROMINATED DIPHENYLETERS (PBDES) IN BALTIC SEA FISH AND EXPOSURE OF FINNISH POPULATION IN 2002 AND 2009
A. Suutari, A. Hallikainen, R. Airaksinen, P. Vuorinen, J. Mannio, H. Kiviranta **1261**
- 11:45 THE POLYBROMINATED FLAME RETARDANTS USED IN OUR CHILDRENS SOFT DRINKS
W. Vetter, L. Maier, P. Bendig **1443**

9:15–12:05

MORNING BREAKOUT SESSION

ROOM 5

POPs in the Environment

Chairs: Beatriz Cárdenas González, Julianna Leone

- 9:45** THE FIRST NATIONWIDE SURVEY OF PERSISTENT PERFLUORINATED COMPOUNDS IN WILD ANIMAL IN JAPAN — WILD RAT —
N.Yamashita, L.Yeung, S.Taniyasu, K.Kwok, P.Lam, K.Kannan, K.Guruge **1186**
- 10:05** 40 YEARS OF POPs MONITORING WITH PEREGRINE FALCON EGGS IN BADEN-WUERTTEMBERG/GERMANY: RECENT RESULTS
F.Neugebauer, K.von der Trenck, P.Behnisch, N.Bitomsky, A.Brouwer, A.Kotz, R.Malisch, O.Paepke, D.Schmidt **1435**
- 10:25** POPs GLOBAL DISTRIBUTION IN AMBIENT AIR SAMPLES FROM MONET NETWORK
I.Holoubek, J.Klanova, P.Cupr, P.Kukucka, J.Borukova, J.Kohoutek, R.Prokes, R.Kares **1170**
- 10:45** SHORT-TERM VARIABILITY IN POLYBROMINATED DIPHENYL ETHER CONCENTRATIONS DURING AND AFTER A SEVERE DUST STORM EPISODE IN KUWAIT CITY, KUWAIT
B.Gevao, F.Jaward, J.Zafar, M.Bahloul, M.MacLeod, K.Jones **1238**
- 11:05** EXPERIENCES OF THE FIRST STAGE OF OPERATION OF THE MEXICAN DIOXIN AND FURAN AIR MONITORING NETWORK
B.Cardenas, J.Ferrario, S.Benitez, A.Ortinez, F.Angeles, S.Noemi, C.Byrne, I.Galindo, G.Gold, E.Herrera, V.Macias **1432**
- 11:25** POLYCHLORINATED BIPHENYLES IN THE ATMOSPHERE OF SEVEN MAJOR INDIAN CITIES
P.Chakraborty, G.Zhang, P.Lam, K.Jones **1500**
- 11:45** SOURCES OF ERROR IN SAMPLING AND ANALYSIS OF PCBS IN INDOOR AIR
K.Hilst, W.Mills **1563**

14:00–17:10

AFTERNOON BREAKOUT SESSION

ROOM 1

Flame-Retardants in a Post-PBDE World

Chairs: Tom Webster, Heather Stapleton

- 14:00** FLAME RETARDANTS IN THE SERUM OF PET DOGS
M.Venier, R.Hites **1301**
- 14:20** TOXICOKINETICS OF 1,2-DIBROMO-4-(1,2-DIBROMOETHYL) CYCLOHEXANE IN JUVENILE BROWN TROUT (SALMO TRUTTA) AND EFFECTS ON PLASMA SEX HORMONES
G.Tomy, B.Gemmill, K.Pleskach, L.Peters, V.Palace, K.Wautier, B.Park, B.Rosenberg, R.McCrimble **1291**
- 14:40** ANALYSIS OF THE FLAME RETARDANT METABOLITE BIS (1,3-DICHLOROISOPROPYL) PHOSPHATE (BDCPP) IN URINE USING LC/MS-MS
E.Cooper, H.Stapleton, A.Covaci, A.van Nuijs, T.Webster **1307**
- 15:00** NEUROTOXICITY OF A PENTABDE REPLACEMENT TRIS (1,3-DICHLOROPROPYL) PHOSPHATE: STUDIES IN PC12 CELLS
L.Dishaw, C.Powers, I.Ryde, S.Roberts, F.Seidler, T.Slotkin, H.Stapleton **1299**
- 15:20** **Coffee Break**
- 15:50** IDENTIFICATION OF FLAME RETARDANTS IN POLYURETHANE FOAM COLLECTED FROM BABY PRODUCTS
H.Stapleton, S.Klosterhaus, A.Blum, T.Webster **1310**
- 16:10** OCCURRENCE OF ORGANOPHOSPHATE FLAME RETARDANTS AND PLASTICIZERS IN A LAUNDRY FACTORY FOR HOME AND OFFICE CLEANING TOOLS
H.Takigami, G.Suzuki, Y.Hirai, S.Sakai **1358**
- 16:30** PRELIMINARY HUMAN EXPOSURE ASSESSMENT TO ALTERNATIVE FLAME RETARDANTS FROM INDOOR DUST IN BELGIUM
A.Covaci, N.Van Den Eede, N.Ali, A.Dirtu, L.Roosens, H.Neels **1322**
- 16:50** PENTABDE ALTERNATIVES IN U.S. INDOOR ENVIRONMENTS
T.Webster, D.Watkins, C.Walker, A.Fraser, W.Heiger-Bernays, H.Stapleton, M.McClean **1406**



SPONSORED SESSION



14:00–17:10

AFTERNOON BREAKOUT SESSION

ROOM 2

Contaminated Sites: Cases, Remediation, Risk and Policy — Part 1

Chairs: Mike DeVito, Ed Conti

- 14:00 PCB FISH CONTAMINATION IN SWISS RIVERS - TRACING OF POINT SOURCES
M.Zennegg, P.Schmid, J.Tremp **1154**
- 14:20 HCH/DDT CONTAMINATION AROUND FORMER ORGANOCHLORINE PRODUCTIONS IN BRAZIL AND A PRELIMINARY HUMAN RISK ASSESSMENT
J.P.Machado Torres, C.Froes-Asmus, R.Weber, J.Vijgen **1304**
- 14:40 CASE STUDY TO ESTABLISH BACKGROUND SOIL CONCENTRATIONS OF PCDD/FS
C.Sandau, P.Houle **1560**
- 15:00 PFOA- CONTAMINATED SITE SURROUNDING A TEFLON MANUFACTURING FACILITY
V.Vieira, H.Shin, P.Ryan, R.Detwiler, B.Sanders, T.Webster, T.Fletcher, S.Bartell **1393**
- 15:20 **Coffee Break**
- 15:50 DISCOVERY AND INVESTIGATION OF PFOS/PFCs CONTAMINATION FROM A PFC MANUFACTURING FACILITY IN MINNESOTA - ENVIRONMENTAL RELEASES AND EXPOSURE RISKS
F.Oliaei, D.Kriens, R.Weber **1507**
- 16:10 APPLICATION OF A HUMAN EXPOSURE MODEL IN A PCDD/F CONTAMINATED SITE CASE STUDY - EVALUATION OF MODEL PERFORMANCE AND ASSOCIATED UNCERTAINTIES
K.Wiberg, M.MacLeod, A.Aberg **1168**
- 16:30 DEVELOPMENT OF A UNIDO METHODOLOGY FOR POPS CONTAMINATED SITES: SITE ASSESSMENTS IN GHANA AND NIGERIA
C.Centeno, M.Eisa, L.Li **1387**
- 16:50 THE POPS TOOLKIT AND CONTAMINATED SITE RISK MANAGEMENT IN SOUTH-EAST ASIA (WWW.POPSTOOLKIT.COM)
T.Boivin, C.Marulanda, J.Suwala, S.Pech, J.Shah, J.Wilcockson, G.Bruce **1494**

14:00–17:10

AFTERNOON BREAKOUT SESSION

ROOM 3

POPs in Marine Mammals: Levels, Trends, and Effects

Chairs: Susan Shaw, Shinsuke Tanabe

- 14:00 POLYCHLORINATED BIPHENYLS (PCBs) AND HYDROXYLATED PCBs (OH-PCBs) IN THREE PORPOISE SPECIES: ACCUMULATION FEATURES AND METABOLIC CAPACITY
M.Ochiai, K.Nomiyama, T.Isobe, T.Matsuishi, T.Yamada, S.Tanabe **1388**
- 14:20 CONTAMINATION STATUS AND ACCUMULATION FEATURES OF PCDDs, PCDFs AND DIOXIN-LIKE PCBs IN FINLESS PORPOISES (NEOPHOCAENA PHOCAENOIDES) FROM KOREAN COASTAL WATERS
H.-B.Moon, H.Choi, Y.An, K.Park, S.Choi, D.Moon, K.Kannan **1614**
- 14:40 DIOXIN RELATED CONTAMINANTS IN LAKE ONTARIO AMERICAN EEL: A LIKELY CAUSE FOR THEIR DECLINE?
J.Byer, M.Alaee, R.Brown, M.Lebeuf, S.Backus, M.Keir, J.Casselmann, P.Hodson **1459**
- 15:00 IDENTIFICATION OF DIOXIN RELATED COMPOUNDS BY COMBINED IN VITRO BIOASSAY/ CHEMICAL ANALYSIS: MONITORING STUDY FOR ASIAN COASTAL WATERS USING BIVALVES AS BIOINDICATORS
M.Someya, G.Suzuki, M.Watanabe, A.Subramanian, G.Zheng, P.Lam, M.Prudente, M.Zakaria, P.Viet, S.Takahashi, S.Tanabe **1335**
- 15:20 **Coffee Break**
- 15:50 PHYSIOLOGICALLY BASED PHARMACOKINETIC (PBPK) MODELS FOR THE BIOACCUMULATION OF PBDES IN MALE HARBOUR PORPOISES
L.Weijis, A.Covaci, K.Das, R.Blust **1252**
- 16:10 LEVELS OF ORGANOHALOGEN CONTAMINANTS AND PARASITIC INFECTION IN FINLESS PORPOISES FROM JAPAN
T.Isobe, T.Oshihoi, H.Hamada, T.Yamada, Y.Tajima, K.Nakayama, S.Tanabe **1512**
- 16:30 ACCUMULATION FEATURES OF HYDROXYLATED POLYBROMINATED DIPHENYL ETHERS (OH-PBDEs) IN THE BLOOD OF TOOTHED AND BALEEN WHALES STRANDED AT JAPANESE COASTAL WATERS
K.Nomiyama, A.Eguchi, M.Ochiai, H.Mizukawa, S.Murata, T.Isobe, T.Yamada, S.Takahashi, S.Tanabe **1333**
- 16:50 LEVELS OF PERFLUORINATED CHEMICALS (PFCs) IN MARINE MAMMALS IN ARCTIC AREAS OF THE NORDIC COUNTRIES DURING THREE DECADES (1984-2007)
A.Rotander, A.Karrman, A.Polder, F.Riget, G.Audunsson, M.Dam, B.van Bavel **1463**

