## Přehled aplikací GC-MS

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*Zdroj: Google Scholar, e-Library

### GC-MS/MS (TQ)

#### 7000 Typy aplikací

![Typy aplikací chart]

### Environmentální aplikace - GC-MS/MS (TQ) 7000

#### Pesticidy

- **Analysis of Complex Samples by GC/MS/MS - Pesticides in Marine Biota**

Authors: Sandy C.

Abstract: This application brief describes the analysis of a marine biota sample using the Agilent 7000A Triple Quad GC/MS system in MRM mode in combination with Agilent Capillary Flow Technology to provide backflushing of high-boiling materials. System up-time is maximized and the need for maintenance is reduced by keeping the chromatographic system and MS ion source cleaner of high-boiling matrix materials between each injection.
• Leaching behaviour of chlorpyriphos and cypermethrin in sandy loam soil
  Authors: Rani M., Saini S., Kumari B.
  Abstract: The mobility of chlorpyriphos and cypermethrin in sandy loam soil was studied in soil columns under laboratory conditions at two application rates, 25 and 50 μg, with simulated rainfall of 300 mm. Residues of chlorpyriphos and cypermethrin in soil and leachate were estimated by gas–liquid chromatography and confirmed by gas chromatography–mass spectrometry. Though maximum concentration of both the insecticides was found in the top 10-cm layer, chlorpyriphos was found distributed in the soil up to a depth of 35 cm and cypermethrin remained up to 15 cm. Results indicated the low mobility of both the insecticides under saturated moisture condition and hence may not contaminate ground water. No residues of any insecticide were detected in the leachate fractions.

• Organochlorine Pesticides in the Atmosphere and Surface Water from the Equatorial Indian Ocean: Enantiomeric Signatures, Sources, and Fate
  Authors: Huang Y., Xu Y., Lin J., Xu W., Zhang G., Cheng Z., Liu J.
  Abstract: Organochlorine pesticides were monitored in air and water over the equatorial Indian Ocean. The 7000 was used to identify and quantify the compounds.

• Sensitive Detection of Pyrethroids in Surface Water and Sediment
  Authors: Baumann S.
  Abstract: A method has been developed on the Agilent 7000 series Triple Quadrupole GC/MS using NCI GC/MS/MS with backflushing. It delivers estimated method detection limits (EMDLs) for pyrethroids as low as 0.05 parts per trillion (ppt) in water samples and 0.02 parts per billion (ppb) for sediment, enabling efficient monitoring of water sources for toxic pyrethroid levels.

• Using Analyte Protectants and Solvent Selection to Maximize the Stability of Organophosphorous Pesticides during GC/MS Analysis
  Authors: Morales E.
  Abstract: Several solvents and analyte protectants were evaluated for their ability to stabilize and maximize the recoveries of a number of organophosphorous pesticide residues during GC/MS analysis. Hexane provided the best analyte stability for a wide range of pesticides, and d-sorbitol offered the most benefit to recovery as an analyte protectant.

• Validation of Analytical Method for Determination of 203 Pesticide Residues in Soil by GC-MSMS
  Authors: El-Gohary, Abir A
  Abstract: 203 pesticides tested in soil. QA/QC in the article.

• Validation of a GC–MS/MS method for simultaneous determination of 86 persistent organic pollutants in marine sediments by pressurized liquid extraction followed by stir bar sorptive extraction
  Authors: Camino-Sánchez F.J., Zafra-Gómez A., Pérez-Trujillo J.P.
Abstract: A multiresidue method for the analysis of 86 persistent pollutants in marine sediments at ultra-trace level has been developed and validated using pressurized liquid extraction (PLE) and stir-bar sorptive extraction (SBSE) coupled with thermal desorption and gas chromatography–triple quadrupole mass spectrometry (TD–GC–MS/MS QqQ). The compounds analyzed belong to various families such as polychlorinated biphenyls, polycyclic aromatic hydrocarbons, polybrominated diphenyl ethers, organophosphorus and organochlorine pesticides and other pesticides such as urons (urea pesticides), and triazines.

PAU a jejich metabolity

- Optimized PAH Analysis Using the Agilent Self-Cleaning Ion Source and the Enhanced PAH Analyzer
  Authors: Szelewski M., Quimby B.D.
  Abstract: The Agilent enhanced PAH analyzer was used for the analysis of polycyclic aromatic hydrocarbons (PAHs) with the Self-Cleaning Ion Source in Continuous Cleaning mode. Both the Agilent 5977A Series GC/MSD system and Agilent 7000B Triple Quadrupole GC/MS version of the analyzer were used. All instrument parameters including inlet, column, and MS were investigated and optimized. Linearity and ISTD reproducibility across a calibration range 1–1000 pg, were improved while maintaining sensitivity.

- Analyzing Wastewater Effluents for PAH’s and PBDE’s Using the Agilent 7000 Triple Quadrupole GC/MS
  Authors: Pinchin M.
  Abstract: An analytical method has been developed on the Agilent 7000 series Triple Quadrupole GC/MS for the analysis of polyaromatic hydrocarbons and polybrominated diphenyl ethers in wastewater. With a single extraction and no cleanup, this method meets the detection limit requirements of the United Kingdom Chemical Investigations Programme.

- Determination of Nitro-Polycyclic Aromatic Hydrocarbons in Air Particulates Using the Agilent 7000A Triple Quadrupole GC/MS System
  Authors: Klee D.
  Abstract: Detection of nitro-PAH in air using MRM. Detection levels low pg/ul were achieved which corresponds to low pg/m3 concentration in air.

- Metal–organic framework MIL-53(Al) as a solid-phase microextraction adsorbent for the determination of 16 polycyclic aromatic hydrocarbons in water samples by gas chromatography–tandem mass spectrometry
  Authors: Chen F., Zang H. , Wang X., Cheng J., Zhao R. , ChengCh., Lu X.
  Abstract: Metal–organic framework (MOF) materials as fiber coatings for the solid-phase microextraction (SPME) of polycyclic aromatic hydrocarbons (PAHs) in water samples were explored. Fibers coated with MIL-53(Al, Cr, Fe) materials were fabricated by an adhesive method for SPME. The quantitation was performed by gas chromatography–tandem mass spectrometry (GC–MS/MS) using the multiple reaction monitoring mode. Low detection limits (0.10 ng L¬1 to 0.73 ng L¬1, S/N = 3), and good linearity (R2 > 0.98) for aqueous solutions containing 16 PAH. QA/QC
The Erika Oil Spill, 10 Years After: Assessment of the Natural Weathering of the Oil and Natural Recovery of Vegetation
Authors: Jézéquel R., Poncet F.
Abstract: Environmental testing for alkanes and PAHs in the Erika oil spill territory on France

Thermal desorption – comprehensive two-dimensional gas chromatography coupled with tandem mass spectrometry for determination of trace polycyclic aromatic hydrocarbons and their derivatives
Authors: Fushimi A., Hashimoto S., Ieda T., Ochiai N.
Abstract: PAHs were measured in particulate samples ((urban dust and diesel exhaust) using thermal desorption and GCxGC and MS/MS. The TD-GCxGC/MSMS results were superior to the TD-GC-HRMS. The detection limits were 0.03–0.3 pg (PAHs), 0.04–0.2 pg (oxygenated PAHs), 0.03–0.1 pg (nitrated PAHs), and 0.01–0.08 pg (methylated PAHs).

Validation of a GC–MS/MS method for simultaneous determination of 86 persistent organic pollutants in marine sediments by pressurized liquid extraction followed by stir bar sorptive extraction
Authors: Camino-Sánchez F.J., Zafra-Gómez A., Pérez-Trujillo J.P.
Abstract: A multiresidue method for the analysis of 86 persistent pollutants in marine sediments at ultra-trace level has been developed and validated using pressurized liquid extraction (PLE) and stir-bar sorptive extraction (SBSE) coupled with thermal desorption and gas chromatography–triple quadrupole mass spectrometry (TD–GC–MS/MS QqQ). The compounds analyzed belong to various families such as polychlorinated biphenyls, polycyclic aromatic hydrocarbons, polybrominated diphenylethers, organophosphorus and organochlorine pesticides and other pesticides such as urons (urea pesticides), and triazines.

Using the Agilent 7000B Triple Quadrupole GC/MS for Parts per Trillion Detection of PAH Metabolites in Human Urine
Authors: Bienvenu G., Chouinard B.D.
Abstract: A method was developed for sensitive and robust monitoring of very low levels of polycyclic aromatic hydrocarbons (PAH) metabolites in urine using the Agilent 7000B Triple Quadrupole GC/MS System. The resulting limits of detection (LODs) were as low as 0.7 parts per trillion (ppt), and limits of quantitation (LOQs) were as low as 2.5 ppt, with nearly 100% recovery for all 19 PAH metabolites. This method was developed for current use by the Canadian Health Measures Survey (CHMS).

Determination of Nitro-Polycyclic Aromatic Hydrocarbons in Air Particulates using GC/Triple Quadrupole/MS
Authors: David F., Klee M.
Abstract: Use of Agilent 7000A GC/QQQ for analysis of trace organic pollutants in air samples.

PBDE, Dechloran, organofosfátové retardéry hoření
• Alternative flame retardants, Dechlorane Plus and BDEs in the blubber of harbour porpoises (Phocoena phocoena) stranded or by caught in the UK during 2008
  Authors: Law R.J., Losada S., Barber J.L., Bersuder P.
  Abstract: Standed porpoises were tested for flame retardant accumulation in their blabber.

• Analysis of organophosphate flame retardant diester metabolites in human urine by liquid chromatography electrospray ionisation tandem mass spectrometry
  Authors: Van den Eede N., Neelsa H., Jorens P.G., Covaci A.
  Abstract: Agilent GC/MSMS and LC/MS/MS was used to measure the OP flame-retardant metabolites in urine. Result between GCTQ and LCTQ are compared, highlighting the benefits/advantages of each technique.

• Analytical method for the determination of halogenated norbornene flame retardants in environmental and biota matrices by gas chromatography coupled to tandem mass spectrometry
  Authors: Barón E., Eljarrat E., Barceló D.
  Abstract: NCI/MS/MS, Method limits of detection (MDLs), ranging between 0.12 and 1.26 pg/g dw, 1.16–2.90 pg/g dw and 2.30–21.1 pg/g lw for sediment, sludge and fish. QA/QC respectively, were much better than those obtained by GC–MS, with improvement factor up to 320.

• Analyzing Wastewater Effluents for PAH’s and PBDE’s Using the Agilent 7000 Triple Quadrupole GC/MS
  Authors: Pinchin M.
  Abstract: An analytical method has been developed on the Agilent 7000 series Triple Quadrupole GC/MS for the analysis of polyaromatic hydrocarbons and polybrominated diphenyl ethers in wastewater. With a single extraction and no cleanup, this method meets the detection limit requirements of the United Kingdom Chemical Investigations Programme.

• Determination of polybrominated diphenyl ethers and polychlorinated biphenyls in fishery and aquaculture products using sequential solid phase extraction and large volume injection gas chromatography/tandem mass spectrometry
  Authors: Lu D., Lin Y., Feng C., Wang D., Qiu X., Jin Y.
  Abstract: PCBs. Large volume injection, accelerated solvent extraction, QA/QC

• Emerging and historical halogenated flame retardants in fish samples from Iberian rivers
  Authors: Santín G., Barón E., Eljarrat E., Barceló D.
  Abstract: Testing the bioaccumulation of the flame retardants in fish.

• Fate and Ecological Effects of Decabromodiphenyl Ether in a Field Lysimeter
  Authors: Du W., Ji R., Sun Y., Zhu J., Wu J.
Abstract: Flame-retardant polybrominated diphenyl ethers (PBDEs) are environmental contaminants. Deca-BDE is increasingly used commercially, but little is known about the long-term fate and impact of its major component, decabromodiphenyl ether (BDE-209), on the soil environment. In this study, we investigated the fate and ecological effect of BDE-209 over 4 years in outdoor lysimeters in a field planted with a rice–wheat rotation. BDE-209 and six lower-brominated PBDEs (BDE-28, -47, -99, -153, -154, and -183) were detected in soil layers of the test lysimeter. We calculated an average BDE-209 migration rate of 1.54 mg·m$^{-2}$·yr$^{-1}$. In samples collected in May 2008, November 2008, November 2009, November 2010, and November 2011, 95.5%, 94.3%, 108.1%, 33.8%, and 35.5% of the spiked BDE-209 were recovered, respectively. We predicted the major pathway for debromination of BDE-209 in soil to be: BDE-209→BDE-183→BDE-153/BDE-154→BDE-99→BDE-47→BDE-28. In plants, BDE-209 and seven lower-brominated PBDEs (BDE-28, -47, -99, -100, -153, -154, and -183) were detected. BDE-100 was mainly derived from the debromination of BDE-154 in plants, but sources of other lower-brominated PBDEs were still difficult to determine. In soils containing BDE-209 for 4 years, soil urease activity increased, and soil protease activity slightly decreased. Our results provide important insights for understanding the behavior of BDE-209 in agricultural soils.

### Gas chromatography–triple-quadrupole mass spectrometry for analysis of selected polyhalogenated pollutants in plants. Comparison of extraction methods

Authors: Pérez R.A., Tadeo J.L., Albero B., Miguel E.

Abstract: Multiple extraction methods employed, only PCB 153 was detected at quantitative level. QA/QC.

### High throughput sample preparation in combination with gas chromatography coupled to triple quadruple tandem mass spectrometry (GC–MS/MS): A smart procedure for (ultra)trace analysis of brominated flame retardants in fish

Authors: Kalachova K., Pulkrabova J., Cajka T., Sandy C., Hajslova J.

Abstract: Comparing EI/MS/MS and NCI SIM detection of PBDEs in complex matrix. When highly selective mass transitions in GC–MS/MS (EI) were used for identification and quantification, a significant decrease of problematic interferences was observed compared to NCI where most of the compounds were quantified according to the less selective m/z 79 corresponding to a bromine atom.

### Influence of Hydrological Parameters on Organohalogenated Micropollutant (Polybrominated Diphenyl Ethers and Polychlorinated Biphenyls) Behaviour in the Seine (France)

Authors: Tlili K., Labadie P., Alliot F., Bourges C.

Abstract: The Seine was tested for 6mo monitoring the PCB and PBDE content both in water and in particulates

### Polychlorinated Biphenyls, Polybrominated Diphenyl Ethers, and Phthalates in Roach from the Seine River Basin (France): Impact of Densely Urbanized Areas

Authors: Teil J., Tlili K., Blanchard M., Labadie P., Alliot F.

Abstract: River water and sediment was tested for PCBs, PBDEs upstream and downstream form populated areas. QA/QC
• Rapid analysis of polybrominated diphenyl ethers in soil by matrix solid-phase dispersion using bamboo charcoal as dispersive sorbent

Authors: Yuan J., Zhao R., Cheng Ch., Wang X., Cui Z.

Abstract: NCI-SIM measurements, QA/QC given. (Note: MSMS detection probably would have worked better)
Validation of a GC–MS/MS method for simultaneous determination of 86 persistent organic pollutants in marine sediments by pressurized liquid extraction followed by stir bar sorptive extraction

Authors: Camino-Sánchez F.J., Zafra-Gómez A., Pérez-Trujillo J.P.

Abstract: A multiresidue method for the analysis of 86 persistent pollutants in marine sediments at ultra-trace level has been developed and validated using pressurized liquid extraction (PLE) and stir-bar sorptive extraction (SBSE) coupled with thermal desorption and gas chromatography–triple quadrupole mass spectrometry (TD–GC–MS/MS QqQ). The compounds analyzed belong to various families such as polychlorinated biphenyls, polycyclic aromatic hydrocarbons, polybrominated diphenylethers, organophosphorus and organochlorine pesticides and other pesticides such as urons (urea pesticides), and triazines.
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Authors: Teil J., Tlili K., Blanchard M., Labadie P., Alliot F.

Abstract: River water and sediment was tested for PCBs, PBDEs upstream and downstream from populated areas. QA/QC

• **Ultrasound-assisted magnetic SPE based on Fe3O4-grafted graphene for the determination of polychlorinated biphenyls in water samples**

Authors: Cao X., Chen J., Ye X., Zhang F.

Abstract: Unique SPE extraction method using Fe3O4 grafted graphene nanocomposite. QA/QC, Linearity: 0.1 ng/L to -100ng/L

• **Discovery of Hydroxylated Polychlorinated Biphenyls (OH-PCBs) in Sediment from a Lake Michigan Waterway and Original Commercial Aroclors**

Authors: X Chen, N Ding, H Zang, H Yeung, RS Zhao

Abstract: Hydroxylated polychlorinated biphenyls (OH-PCBs) were measured in surficial sediment from Indiana Harbor and Ship Canal (IHSC), East Chicago, IN and five original Monsanto Aroclors. These compounds were measured using gas chromatography with tandem mass spectrometry (GC-MS/MS) and certified standards that allowed us to identify 65 individual or coeluting congeners. Concentrations in the sediment ranged from 0.20 to 26 ng/g dry weight. Profiles of most samples were similar and were dominated by mono- to penta-chlorinated OH-PCBs. Interestingly, most of the samples strongly resembled the OH-PCB profiles of Aroclors 1221, 1242, 1248, and 1254, yet 25% of OH-PCBs measured in the sediment were not detected in Aroclors. A strong positive correlation was found between ΣOH-PCB and ΣPCB (p < 0.0001) and also between many individual OH-PCB:PCB pairs (p < 0.05). Analysis of OH-PCB: PCB pairs suggest PCB degradation is unlikely as a source of OH-PCBs in IHSC sediment. We are the first to report levels of OH-PCBs in sediment and Aroclors, and our discovery is significant because it is likely that OH-PCB contamination exists in sediment anywhere that PCB contamination from Aroclors is present.

• **Validation of a GC–MS/MS method for simultaneous determination of 86 persistent organic pollutants in marine sediments by pressurized liquid extraction followed by stir bar sorptive extraction**

Authors: Camino-Sánchez F.J., Zafra-Gómez A., Pérez-Trujillo J.P.

Abstract: A multiresidue method for the analysis of 86 persistent pollutants in marine sediments at ultra-trace level has been developed and validated using pressurized liquid extraction (PLE) and stir-bar sorptive extraction (SBSE) coupled with thermal desorption and gas chromatography–triple quadrupole mass spectrometry (TD–GC–
The compounds analyzed belong to various families such as polychlorinated biphenyls, polycyclic aromatic hydrocarbons, polybrominated diphenylethers, organophosphorus and organochlorine pesticides and other pesticides such as urons (urea pesticides), and triazines.

**Hormony (estrogeny, testosteron)**

- **Analysis of natural-occurring and synthetic sexual hormones in sludge-amended soils by matrix solid-phase dispersion and isotope dilution gas chromatography–tandem mass spectrometry**
  
  **Authors:** Albero B., Sánchez-Brunete C., Miguel E.
  
  **Abstract:** Low concentration of natural hormones and higher concentrations of synthetic hormones were detected in sludge fortified soil. QA/QC. The limits of detection (LODs) ranged from 10 to 300 pg g⁻¹.

- **Identification and quantification of 5α-dihydrotestosterone in the teleost fathead minnow (Pimephales promelas) by gas chromatography–tandem mass spectrometry**
  
  **Authors:** Margiotta-Casaluci L., Courant F., Antignac J.P.
  
  **Abstract:** The analyses were performed using plasma samples collected from both male and female adult fish and samples of testicular tissue collected from sexually mature males. Both T and DHT were identified and quantified in all the samples analyzed.

- **Quantitative analysis of conjugated and free estrogens in swine manure: Solutions to overcome analytical problems due to matrix effects**
  
  **Authors:** Singh A.K., Gupta S., Kumar K., Gupta S.
  
  **Abstract** Analysis of conjugated (GC/MS) and free estrogens (LCMS, form Applied!) in pig manure samples. The extraction and calibration methods used in the present study yielded excellent sensitivity, reproducibility and >85% recovery of both free and conjugated estrogens that was independent of the manure matrix. In general, the total estrogen loads in liquid and solid samples were 5.1 mg/l and 4.93 mg/kg, respectively. This may represent the hormonal load of approximately 2.3 tons estrogen per day.

- **Simultaneous determination of estrogenic and androgenic hormones in water by isotope dilution gas chromatography–tandem mass spectrometry**
  
  **Authors:** Trinh T., Harden N.B., Coleman H.M., Khan S.J.
  
  **Abstract:** 7 estrogenic and 5 androgenic hormones in short, 15 min run. MDL 1-5ng/L for most analytes. QA/QC given.

- **Using the Agilent 7696A Sample Prep WorkBench for the analysis of estrone by GC Triple Quadrupole Mass Spectrometry**
  
  **Authors:** Mrozinski P.
  
  **Abstract:** Analysis of endocrine disruptors is increasingly becoming a high volume analysis in many labs and crossing disciplines such as clinical chemistry, industrial exposure, drug discovery and development and environmental analyses including emerging
contaminate and persistent organic pollutants. The demand placed on laboratories for these high volume tests places a burden on not only the analytical measurement tools but most importantly accurate and reproducible sample preparation. This application note briefly outlines how the Agilent 7696A Sample Prep WorkBench can be used to prepare samples for analysis through GC/MS/MS using an automated workflow.

**N-nitrosoamin, N-nitrosodimethylaminy**

- **Analysis of N-nitrosamines in water by isotope dilution gas chromatography–electron ionisation tandem mass spectrometry**
  Authors: McDonald J.A., Harden N.B., Nghiem L.D., Khan S.J.
  Abstract: A sensitive new analytical method for eight N-nitrosamines in water is reported. Tandem mass spectrometry avoids the need for chemical ionization. Detection limits of 0.4–4 ng L−1 were demonstrated for a variety of aqueous matrices. Isotope dilution ensures accurate quantitation of all analytes.

- **Effects of membrane fouling on N-nitrosamine rejection by nanofiltration and reverse osmosis membranes**
  Authors: Fujioka T., Khan S.J., McDonald J.A.
  Abstract: The Nitrosamine rejection of different membranes were studied by low MW effluents and by tertiary effluents.

- **N-nitrosamine rejection by reverse osmosis: Effects of membrane exposure to chemical cleaning reagents**
  Authors: Fujioka T., Khan S.J., McDonald J.A., Roux A., Poussade Y.
  Abstract: The use of reverse osmosis membranes and their cleaning impact on the rejection of N-nitrosamines was studied.

- **Analysis of N-nitrosodimethylamine (NDMA) in Water using GC Triple Quadrupole Mass Spectrometry**
  Authors: Kahl, Jones D., Lowe L., Snyder S.
  Abstract: A method was developed on the Agilent 7890A Series GC and an Agilent 7000B Triple Quadrupole GC/MS mass spectrometer in positive chemical ionization (PCI) mode that provides sensitivity of one part per trillion (ppt) and lower for N-nitrosodimethylamine (NDMA). The method further provides an acceptable alternative to the commonly used ion trap MS method for those laboratories that do not have an ion trap instrument. The limit of detection (LOD) was 0.20 ppt, and the limit of quantitation (LOQ) was determined to be 0.56 ppt.

- **Selective determination of tobacco-specific nitrosamines in mainstream cigarette smoke by GC coupled to positive chemical ionization triple quadrupole MS**
  Authors: Wu D., Lu Y., Lin H., Zhou W., Gu W.
  Abstract: A rapid method for the selective determination of four kinds of tobacco-specific nitrosamines, N-nitrosornonicotine, N-nitrosoanatabine, N-nitrosoanabasine and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone, in mainstream cigarette smoke was
developed by GC coupled to positive chemical ionization triple-quadrupole MS. After mainstream cigarette smoke was collected on a Cambridge filter pad, the particulate matter was extracted with 0.1 M HCL aqueous solution, cleaned by positive cation-exchange solid extraction, and finally injected into GC–MS/MS using isotopically labeled analogues as internal standards. Excellent linearity was obtained over the concentration range of 0.5–200.0 ng mL−1 for all tobacco-specific nitrosamines with values for correlation coefficient between 0.9996–0.9999. Limits of detection of each tobacco specific nitrosamine varied from 0.023–0.028 ng cig−1, and lower limits of quantification varied from 0.077–0.093 ng cig−1. The recovery of each tobacco specific nitrosamine was from 90.0–109.0%. The relative standard deviations of the intra-day and inter-day precisions were 3.1–5.8 and 3.9–6.6, respectively. This method was applied to reference and domestic cigarettes. The result showed that the method was consistent with traditional methods and can be used as an effective approach for the routine analysis of tobacco-specific nitrosamines.

Ostatní

- **A new validated analytical method for the determination of tributyltin in water samples at the quantification level set by the European Union**
  Authors: Devos C., David F., Sandra P.

  Abstract: European Unit limit is ~60pg/L in surface water. Method includes stir bar sorptive extraction, followed by thermal desorption GC/MS/MS LOD was about 2000pg/L. GCxGC lowered the detection to 11pg/L, with good QA/QC data. (Note: different extraction steps also can allow for lower detection limits without the use of GCxGC).

- **Analysis of printing ink components from food packaging materials by GC-MS/MS**
  Authors: Sandy C. & UK Env. Research Agency

  Abstract: A method has been developed on the Agilent 7000 GC Triple Quadrupole GC/MS/MS system for the analysis of foods for 20 chemicals that may be present in printing inks applied to the external surface of carton board packaging material. These substances may diffuse through the carton board or set-off onto the food contact surface and then migrate into food. The method described is suitable for the reliable determination of ink substances in packed foods at single-figure parts-per-billion (ppb, μg/kg) levels.

- **Application of GC-MS/MS for the Analysis of Tobacco Alkaloids in Cigarette Filler and Various Tobacco Species**
  Authors: Lisko J.G., Stanfill S.B., Duncan B.W.

  Abstract: This publication reports the first known use of gas chromatography-tandem mass spectrometry for the quantitation of five minor tobacco alkaloids (nornicotine, myosmine, anabasine, anatabine, and isonicoteine) in various tobacco samples. A summary of the concentrations of these minor alkaloid levels in the filler from 50 popular cigarette brands were found to be 659–986 μg/g nornicotine, 8.64–17.3 μg/g myosmine, 127–185 μg/g anabasine, 927–1390 μg/g anatabine, and 23.4–45.5 μg/g isonicoteine. Levels of minor alkaloids found in reference cigarettes (1R5F, 2R4F, 3R4F, CM4, and CM6) as well as burley, flue-cured, oriental, reconstituted, and Nicotiana rustica and Nicotiana glauca tobacco types are also reported. Quantitation
of the minor tobacco alkaloids is important because the alkaloids have been shown to be precursors of carcinogenic tobacco specific N′-nitrosamines

- **Chemical fingerprinting of petroleum biomarkers in Deepwater Horizon oil spill samples collected from Alabama shoreline**

  Authors: Mulabagal V., Yin F., John G.F., Hayworth J.S.
  
  Abstract: Samples collected after the Deep-water Horizon spill, form 2010-2012 are characterized. The presented petroleum biomarker data identifies Deep-water Horizon oil spill wastes. ► Modified cleanup and extraction protocols are provided for rapidly analyzing tar balls samples. ► Data show that virtually all soft, sticky tar balls found on Alabama shoreline are from DH oil spill

- **Determination of biomarkers of tobacco smoke exposure in oral fluid using solid-phase extraction and gas chromatography–tandem mass spectrometry**

  Authors: da Fonseca B.M., Moreno I.E.D, Magalhães A.R.
  
  Abstract: Simultaneous determination of nicotine, cotinine and trans-3′-hydroxycotinine in oral fluid samples using solid-phase extraction and GC/MS/MS. Only 200ul sample, linearity 0.2-100ng/ml. QA/QC

- **Determination of chlorinated toluenes in soils using gas chromatography tandem mass spectrometry**

  Authors: Péreza R.A., Alberoa B., Sánchez-Brunetea C., Tadeoa L.J.
  
  Abstract: Detection of chlorotoluenes in soil. Extraction modes and QA/QC

- **Determination of selected organic contaminants in soil by pressurized liquid extraction and gas chromatography tandem mass spectrometry with in situ**

  Authors: Albero B., Sánchez-Brunete C., Miguel E.
  
  Abstract: Quantification of contaminants in soil extracts can be achieved by employing (GC–MS), (GC–MS/MS), (GC × GC–μECD), (LC–MS) or (LC–MS/MS). Except for some neutral compounds, many EOCs (emerging organic contaminants) are polar, non-volatile and thermally labile compounds and are unsuitable for GC separation. Thus, a derivatization step before GC analysis is necessary to improve their volatility and chromatographic behavior. Derivatization procedures are sometimes laborious and time-consuming; thus, in situ derivatization in the GC injector is an attractive alternative because it avoids preparative steps, accelerates reaction rates and reduces evaporative losses. QA/QC

- **High Sensitivity GC/MS/MS Analysis of Nonpolar Organic Compounds in Water Using the Agilent 7000 Triple Quadrupole GC/MS**

  Authors: Quick J. a kol.
  
  Abstract: A highly sensitive and reliable method has been developed for 51 nonpolar compounds in potable water, and PBDEs, PAHs, and diazinon in wastewater. Most MRLs in potable water were 2 ng/L or less, and the MRLs for the analytes in wastewater less than 0.2 ng/L for some compounds. Run time is less than 20 minutes, sample preparation is straight forward, and the potable water method is accredited by the UKAS.
• **Determination of selected perfluorinated alkyl acids and persistent organic pollutants from a small volume human serum sample relevant for epidemiological studies**

Authors: Koponen J., Rantakokko P., Airaksinen R.

Abstract: Dispersive solid phase extraction; 200 ul serum, QA/QC

• **Development of an adapted version of polar organic chemical integrative samplers (POCIS-Nylon)**

Authors: Belles A., Pardon P., Budzinski H.

Abstract: POCIS- Polar Organic Chemical Integrated Samplers - were tested for their applicability and optimization for the collection of pharmaceuticals and pesticides. The 7000 was used to measure the system performance.

• **Dispersive derivatization liquid–liquid extraction of degradation products/precursors of mustards and V-agents from aqueous samples**

Authors: Palit M., Mallard G.

Abstract: Dispersive derivatization liquid–liquid extraction (DDLLE). The observed limit of detection (LOD) with 1 mL of sample for DDLLE in full scan with AMDIS was 10 ng/mL and with methane chemical ionization, multiple reaction monitoring (MRM) was 100 pg/mL, i.e., 100 fg on-column.

• **Enantiomeric analysis of polycyclic musks in water by chiral gas chromatography–tandem mass spectrometry**

Authors: Wang L., McDonald J.A., Khan S.J.

Abstract: Synthetic musks including nitro musks, macrocyclic musks, and polycyclic musks are widely used in fragrances as racemic mixes. They were detected in anv. Samples. GC/MS/MS and chiral capillary columns. Detection limit: 1.01–2.39 ng/L. QA/QC.

• **Enantiomeric Fraction Determination of 2-Arylpropionic Acids in a Package Plant Membrane Bioreactor**

Authors: Hashim N.H., Stuetz R.M., Khan S.J.

Abstract: The enantiospecific fate of three common pharmaceuticals was monitored in a laboratory-scale membrane bioreactor (MBR). It is hypothesized that the increased (R)-naproxen amounts were the results of the enantiomeric inversion of (S)-naproxen. Such enantiomeric inversion of chiral pharmaceuticals during wastewater treatment processes has not previously been reported. (similar to Water research article)

• **Enantiomeric fate of ibuprofen, ketoprofen and naproxen in a laboratory-scale membrane bioreactor**

Authors: Hashim N.H., Nghiem L.D., Stuetz R.M., Khan S.J.

Abstract: The enantiospecific fate of three common pharmaceuticals was monitored in a laboratory-scale membrane bioreactor (MBR). It is hypothesized that the increased (R)-naproxen amounts were the results of the enantiomeric inversion of (S)-naproxen.
Such enantiomeric inversion of chiral pharmaceuticals during wastewater treatment processes has not previously been reported.

- **Evaluating the Potential of Effluents and Wood Feedstocks from Pulp and Paper Mills in Brazil, Canada, and New Zealand to Affect Fish Reproduction: Chemical**
  Authors: Milestone C.B., Orrego R., Scott P.D., Waye A.
  Abstract: Hypothesis: wood, as feedstock, is a common source of endocrine disruptors. Analyses included in vitro assays for androgenic activity (binding to goldfish testis androgen receptors), estrogenic activity (yeast estrogen screen), and neurotransmitter enzyme inhibition (monoamine oxidase and glutamic acid decarboxylase).

- **Isolation and Identification of Ligands for the Goldfish Testis Androgen Receptor in Chemical Recovery Condensates from a Canadian Bleached Kraft Pulp and Paper Mill**
  Authors: Scott P.D., Milestone C.B., Smith D.S.
  Abstract: Effluent of paper mill studied. This study is the first to confirm nonsteroidal cyclic diterpenes as androgenic at pulp mills. The two most abundant components were manool and geranyl linalool A major in-mill source of these substances was identified, and the role of androgens in mill effluents affecting fish reproduction was reinforced.

- **Global and selective detection of organohalogens in environmental samples by comprehensive two-dimensional gas chromatography–tandem mass spectrometry and high-resolution time-of-flight mass spectrometry**
  Authors: Hashimoto S., Takazawa Y., Fushimi A., Tanabe K.
  Abstract: GCxGC and MS/MS and TofMS (JOEL). More academic than practical.

- **Spatial and Vertical Distribution of Short Chain Chlorinated Paraffins in Soils from Wastewater Irrigated Farmlands**
  Authors: Zeng L., Wang T., Han W., Yuan B., Liu Q.
  Abstract: Evaluation of chlorinated paraffins in wastewater irrigated farmland indicated accumulation of these analytes. In top soil as high as 159-1450ng/g was measured. Work was performed on eth 7000.

- **Uptake of microcontaminants by crops irrigated with reclaimed water and groundwater under real field greenhouse conditions**
  Authors: Calderón-Preciado D., Matamoros V., Savé R.
  Abstract: The testing of agricultura water - ground water and reclaimed water was tested for varied microcontaminants by GSC/MS/MS.

- **Occurrence and analysis of parabens in municipal sewage sludge from wastewater treatment plants in Madrid (Spain)**
  Authors: Albero B., Pérez R.A., Sánchez-Brunete C.
  Abstract: 7 parabens and 2 chlorinated byproducts was monitored in sewage sludge. QA/QC
• **Quantification of Hydrogen Sulfide and Methanethiol and the Study of Their Scavenging by Biocides of the Isothiazolone Family**

Authors: Frerot E., Bagnoud A., Cicchetti E.

Abstract: H2S and CH3SH is measured in water and how they can be eliminated by Proxel {1,2-benzisothiazol-3(2H)-one}

• **Sensitive Detection of 2-MIB and Geosmin in Drinking Water**

Authors: You Y.

Abstract: An automated SPME extraction method for easy and sensitive detection of geosmin and 2-Methylisoborneol (2-MIB) has been developed on the Agilent 7000B Triple Quadrupole GC/MS system coupled to an Agilent 7890A GC with the PAL Automated Sample Injector mounted on it. The method enables method detection limits (MDLs) of 0.1343 and 0.0937 parts per trillion (ppt) and the method quantitation limits (MQLs) were 0.4029 and 0.2811 ppt for 2-MIB and geosmin, respectively.