CENTER FOR HORMONFORSTYRRENDE STOFFER

Litteraturgennemgang for perioden juli 2017 – oktober 2017

Indhold

Humane studier ved Afd. for Vækst og Reproduktion, Rigshospitalet

Søgning er udført på PubMed og dækker perioden 20.juni - 20. september 2017

Følgende søgeprofil er benyttet:

Bisphenol A
Phthalat*
Paraben*
(perfluor* OR polyfluor*)
Triclocarban
Triclosan
(Flame retardant)
tributyltin
endocrine disrupters

kombineret med nedenstående tekst:

AND expos* AND (human OR men OR women OR child* OR adult* OR adolescen* OR infan*)

Limits: title/abstract, English language

I den listede bruttoliste er dobbeltgængere fjernet, ligesom hits der hører under kategorierne in vivo studier, in vitro studier eller wildlife er frasorteret. De kommenterede artikler er highlightet.

Der er til dette kvartals litteraturgennemgang fokus på kildeeksponering blandt sårbare grupper, specifikt børn og gravide. De første tre artikler, der er udvalgt, fokuserer på flammehæmmere. Eksponeringen til flammehæmmere hos mennesker sker hovedsageligt via kontakt med støv og gennem kosten, og børn er en særligt udsat gruppe. I første studie er der fokus på små børns eksponering til flammehæmmere via støv, i anden artikel er der fokus på eksponeringen til flammehæmmere via kosten og i tredje artikel undersøges effekterne af eksponeringen for flammehæmmere i relation til intelligens og koncentrationsevner hos børn. De to efterfølgende artikler har fokus på gravide kvinders eksponering til plastblødgører i hospitalsregi; første studie er et pilotstudie, hvor udsættelsen for phtalater og parabener efter ultralydsundersøgelse estimeres, og sidste studie har fokus på indholdet af forskellige plastblødgører i medicinsk udstyr som fx katetere, slanger etc., der anvendes til gravide kvinder.

Udvalgte artikler

Brominated and organophosphorus flame retardants in body wipes and house dust, and an estimation of house dust hand-loadings in Dutch toddlers

Sugeng EJ, Leonards PEG, van de Bor M.

Environ Res. 2017 Oct;158:789-797. doi: 10.1016/j.envres.2017.07.035. Epub 2017 Jul 27.

Abstract

Children generally have higher Flame Retardant (FR) concentrations in serum compared to other age groups. Toddler behavior enhances direct contact with house dust since their frequent presence proximate to the floor, and their mouthing behavior. This study aimed to thoroughly investigate FR levels in body wipes of toddlers 8-18 months old) and in indoor dust using a noninvasive sampling technique. In this cross-sectional study, body wipes from hands, mouth and back, and indoor household dust samples were collected in twenty-one families and analyzed for one brominated- and seven organophosphorus FRs (polybrominated diphenyl ether 209 (BDE209), tris(2-chloroisopropyl) phosphate (TCIPP), tris(chloroethyl) phosphate (TCEP), tris(1,3-dichloroisopropyl) phosphate (TDCIPP), tris(phenyl) phosphate (TPHP), tris(methylphenyl) phosphate (TMPP), resorcinol bis(diphenyl phosphate) and bisphenol A bis(diphenyl phosphate)). Accelerated solvent extraction was used for extraction and the extract was measured with liquid chromatography combined with mass spectrometry. Non-parametric correlation analyses were performed to assess associations. All FRs were detected in body- and indoor dust samples (median range: 1.0ng/hand wipe (BDE209) to 65ng/hand wipe (TCIPP)) and were mostly correlated with each other. We estimated that approximately 260mg dust (range 50-880mg) accumulated on toddler's hands per day. Hand-to-mouth frequency was negatively associated with FR levels in wipes (τ = -0.38, p = 0.04). With increasing age FR concentrations (BDE209, TCEP, TDCIPP, TPHP and TMPP) on hands decreased significantly (p = 0.01-0.03). Girls had significantly less FRs (TCEP, TCIPP, TPHP and TMPP) on the hands (p = 0.01-0.03) than boys. This is to the best of the authors' knowledge the first study in Europe that measured brominated- as well as organophosphorus FRs in several types of body wipes from toddlers and that estimated the amount of house dust that accumulates on toddler's hands.

Demographic and dietary risk factors in relation to urinary metabolites of organophosphate flame retardants in toddlers

Thomas MB, Stapleton HM, Dills RL, Violette HD, Christakis DA, Sathyanarayana S.

Chemosphere. 2017 Oct;185:918-925. doi: 10.1016/j.chemosphere.2017.07.015.

Abstract

Organophosphate flame retardants (OPFRs), including Tris (1,3-dichloro-isopropyl) phosphate (TDCPP), triphenyl phosphate (TPP), and isopropylated triphenyl phosphate (ITP), are increasingly used in consumer products because of the recent phase out of polybrominated diphenyl ether (PBDE) flame retardants. OPFRs have been widely detected in adults and have been linked to reproductive and endocrine changes in adult males. Carcinogenicity and damage to immunologic, neurologic and developmental systems have been observed in human cell lines. Young children are especially vulnerable to OPFR exposure, but little is known about exposure levels or exposure risk factors in this population. We examined parent-

reported demographic and dietary survey data in relation to OPFR urinary metabolite concentrations in 15- to 18-month old toddlers (n = 41). OPFR metabolites were detected in 100% of subjects. The metabolite of TPP, diphenyl phosphate (DPP) was detected most commonly (100%), with TDCPP metabolite, bis(1,3-dichloro-2-propyl) phosphate (BDCPP), detected in 85-95% of samples, and ITP metabolite, monoisopropylphenyl phenyl phosphate (ip-DPP), detected in 81% of samples (n = 21). Toddlers of mothers earning <$10,000 annually had geometric mean DPP concentrations 66% higher (p = 0.05) than toddlers of mothers earning >$10,000/year (7.8 ng/mL, 95% CI 5.03, 12.11 and 4.69 ng/mL, 95% CI 3.65-6.04, respectively). While no dietary factors were significantly associated with OPFR metabolite concentrations, results suggested meat and fish consumption may be associated with higher DPP and BDCPP levels while increased dairy and fresh food consumption may be associated with lower DPP, BDCPP, and ip-DPP levels. Research with larger sample sizes and more detailed dietary data is required to confirm these preliminary findings.

Developmental PBDE Exposure and IQ/ADHD in Childhood: A Systematic Review and Meta-analysis

Lam J, Lanphear BP, Bellinger D, Axelrad DA, McPartland J, Sutton P, Davidson L, Daniels N, Sen S, Woodruff TJ.

Environ Health Perspect. 2017 Aug 3;125(8):086001. doi: 10.1289/EHP1632.

Abstract

BACKGROUND: In the United States, one in six children are affected by neurodevelopmental disorders, and polybrominated diphenyl ethers (PBDEs) in flame-retardant chemicals are measured ubiquitously in children.

OBJECTIVE: We conducted a systematic a systematic review regarding developmental exposure to PBDEs and intelligence or Attention Deficit/ Hyperactivity Disorder (ADHD) and attention-related behavioral conditions in humans.

METHODS: We searched articles published up to 26 September 2016, and included original studies that quantified exposures to PBDEs incurred any time in proximity to conception or during in utero, perinatal, or childhood time periods. We evaluated the risk of bias of individual studies and the overall quality and strength of the evidence according to the Navigation Guide systematic review methodology. We established criteria in advance to identify studies that could be combined using random effects meta-analyses (DerSimonian-Laird method).

RESULTS: Fifteen studies met the inclusion criteria; 10 studies met the criteria for intelligence and nine for attention-related problems. We rated studies generally with “low” to “probably low” risk of bias and rated the overall body of evidence as “moderate” quality with “sufficient” evidence for an association between Intelligence Quotient (IQ) and PBDEs. Our meta-analysis of four studies estimated a 10-fold increase (in other words, times 10) in PBDE exposure associated with a decrement of 3.70 IQ points (95% confidence interval: 0.83, 6.56). We concluded the body of evidence was of “moderate” quality for ADHD with “limited” evidence for an association with PBDEs, based on the heterogeneity of association estimates reported by a small number of studies and the fact that chance, bias, and confounding could not be ruled out with reasonable confidence.

CONCLUSION: We concluded there was sufficient evidence supporting an association between developmental PBDE exposure and reduced IQ. Preventing developmental exposure to PBDEs could help prevent loss of human intelligence.

Ultrasound gel as an unrecognized source of exposure to phthalates and phenols among pregnant women undergoing routine scan

Messerlian C, Mustieles V, Wylie BJ, Ford JB, Keller M, Ye X, Calafat AM, Williams PL, Hauser R
Int J Hyg Environ Health. 2017 Aug 14. pii: S1438-4639(17)30333-4. doi: 10.1016/j.ijheh.2017.08.003.

Abstract

Systemic absorption of phthalates and parabens has been demonstrated after dermal application of body lotion, and medical devices such as intravenous bags and tubing have been identified as a source of exposure to di(2-ethylhexyl) phthalate (DEHP). However, use of products during medical procedures such as aqueous gel applied during obstetrical ultrasound in pregnancy has not been investigated as a potential source of endocrine disrupting chemical (EDC) exposure. Human studies have associated EDCs with various adverse pregnancy outcomes. There is a need to identify sources of inadvertent exposure to EDCs especially during vulnerable developmental periods such as pregnancy.

We conducted a pilot study to determine whether use of gel during routine obstetrical ultrasound increased urinary concentrations of phthalate and phenol biomarkers.

We recruited 13 women from the Massachusetts General Hospital who provided spot urine samples at the time of their second trimester anatomic survey. The first sample was collected prior to the procedure (pre-exposure, time 1), and two additional samples were obtained at approximately 1-2h (time 2) and 7-12h (time 3) post-exposure following the scan.

Urinary concentrations of several DEHP metabolites and metabolite of diisononyl cyclohexane-1,2-dicarboxylate (DINCH) increased across time. For example, the geometric mean concentrations of mono(2-ethyl-5-hydroxyhexyl) phthalate increased from 3.1ng/ml to 7.1ng/ml (p-value=0.03) between time 1 and time 3. We also observed significant differences in concentrations of metabolites of butylbenzyl phthalate (BBzP), di-n-butyl phthalate (DnBP), and di-isobutyl phthalate (DiBP). For example, mono-n-butyl phthalate (metabolite of DnBP) decreased from 3.5ng/ml to 1.8ng/ml (p-value=0.04) between time 1 and time 2, but then increased to 6.6ng/ml (p-value=0.002) at time 3. Propylparaben concentrations increased from 8.9ng/ml to 33.6ng/ml between time 1 and time 2 (p-value=0.005), followed by a decrease to 12.9ng/ml at time 3 (p-value=0.01). However, we cannot rule out the possibility that some of the observed differences are due to other sources of exposure to these compounds.

While additional research is needed, this pilot study potentially identifies a previously unknown source of phthalate and paraben exposure among pregnant women undergoing routine ultrasound examination.

Exposure of hospitalised pregnant women to plasticizers contained in medical devices

Marie C, Hamlaoui S, Bernard L, Bourdeaux D, Sautou V, Lémery D, Vendittelli F, Sauvant-Rochat MP.
BMC Womens Health. 2017 Jun 20;17(1):45. doi: 10.1186/s12905-017-0398-7.

Abstract

BACKGROUND: Medical devices (MDs) in polyvinyl chloride (PVC) are not a well-known source of exposure to plasticizers, in particular during pregnancy. Because of its toxicity, the di-(2-ethylhexyl) phthalate (DEHP) has been replaced by other plasticizers such as di (isononyl)-cyclohexane-1,2-dicarboxilic acid (DINCH), tri-octyltrimellitate (TOTM) and di-(isononyl) phthalate (DiNP). Our study aimed to quantify the plasticizers (DEHP and alternative plasticizers) contained in PVC medical devices used for hospitalised pregnant women and to describe which these MDs had been used (type, number, duration of exposure).

METHODS: The plasticizers contained in the MDs used for daily care in the Obstetrics Department of a French University Hospital were extracted from PVC (after contact with a chloroform solution), identified and quantified by gas-chromatography-mass-spectrometry analysis. A total of 168 pregnant women hospitalised in the Obstetrics Department with at least one catheter were included in the observational study. The median number of MDs containing plasticizers used and the daily duration of exposure to the MDs were compared in three groups of pregnant women: "Pathology group" (women hospitalised for an obstetric disorder who did not give birth during this hospitalisation; n = 52), "Pathology and delivery group" (hospitalised for an obstetric disorder and who gave birth during this stay; n = 23) and "Delivery group" (admitted for planned or spontaneous delivery without obstetric disorder; n = 93).

RESULTS: DiNP, TOTM and DINCH were the predominant plasticizers contained in the MDs at an amount of 29 to 36 g per 100 g of PVC. Women in the "Pathology group" (preterm labour or other pathology) were exposed to a median number of two MDs containing TOTM and one MD containing DiNP, fewer than those in the "Pathology and delivery group" ($p < 0.05$). Women in the "Pathology group" had a median exposure of 3.4 h/day to MDs containing DiNP and 8.2 h/day to MDs containing TOTM, longer than those in the "Delivery group" ($p < 0.01$).

CONCLUSIONS: Our study shows that the medical management of pregnant women in a hospital setting entails exposure to MDs containing alternative plasticizers (DiNP, TOTM and DINCH).

Bruttoliste

1. Profiling of bisphenol S towards nuclear receptors activities in human reporter cell lines.
Zenata O, Dvorak Z, Vrzal R.
Toxicol Lett. 2017 Sep 12. pii: S0378-4274(17)31338-3. doi: 10.1016/j.toxlet.2017.09.006. [Epub ahead of print]

2. Patal Bisphenol-A exposure affects fetal length growth by maternal glutathione transferase polymorphisms, and neonatal exposure affects child volume growth by sex: From multiregional prospective birth cohort MOCEH study.
Lee YM, Hong YC, Ha M, Kim Y, Park H, Kim HS, Ha EH.
Sci Total Environ. 2017 Sep 8;612:1433-1441. doi: 10.1016/j.scitotenv.2017.08.317. [Epub ahead of print]

3. The Effect of Bisphenol A on Puberty: A Critical Review of the Medical Literature.
Leonardi A, Cofini M, Rigante D, Lucchetti L, Cipolla C, Penta L, Esposito S.
Int J Environ Res Public Health. 2017 Sep 10;14(9). pii: E1044. doi: 10.3390/ijerph14091044. Review.

4. Bisphenol A and estrogen induce proliferation of human thyroid tumor cells via an estrogen-receptor-dependent pathway.
Zhang Y, Wei F, Zhang J, Hao L, Jiang J, Dang L, Mei D, Fan S, Yu Y, Jiang L.
Arch Biochem Biophys. 2017 Sep 4;633:29-39. doi: 10.1016/j.abb.2017.09.002. [Epub ahead of print]

5. Determination of Highly Sensitive Biological Cell Model Systems to Screen BPA-Related Health Hazards Using Pathway Studio.
Ryu DY, Rahman MS, Pang MG.
Int J Mol Sci. 2017 Sep 6;18(9). pii: E1909. doi: 10.3390/ijms18091909.

6. State of the evidence 2017: an update on the connection between breast cancer and the environment.
Gray JM, Rasanayagam S, Engel C, Rizzo J.
Environ Health. 2017 Sep 2;16(1):94. doi: 10.1186/s12940-017-0287-4. Review.

7. Bisphenol A and Metabolic Diseases: Challenges for Occupational Medicine.
Caporossi L, Papaleo B.
Int J Environ Res Public Health. 2017 Aug 25;14(9). pii: E959. doi: 10.3390/ijerph14090959. Review.

8. Bisphenol A and alternatives in thermal paper receipts - a German market analysis from 2015 to 2017.
Eckardt M, Simat TJ.
Chemosphere. 2017 Nov;186:1016-1025. doi: 10.1016/j.chemosphere.2017.08.037. Epub 2017 Aug 11.

9. Environmental endocrine disruptors: New diabetogens?
Fénichel P, Chevalier N.
C R Biol. 2017 Aug 18. pii: S1631-0691(17)30124-5. doi: 10.1016/j.crvi.2017.07.003. [Epub ahead of print]

10. Biomonitoring of chemicals in biota of two wetland protected areas exposed to different levels of environmental impact: results of the "PREVIENI" project.
Guerranti C, Perra G, Alessi E, Baroni D, Caserta D, Caserta D, De Sanctis A, Fanello EL, La Rocca C, Mariottini M, Renzi M, Tait S, Zaghi C, Mantovani A, Focardi SE.
Environ Monit Assess. 2017 Aug 18;189(9):456. doi: 10.1007/s10661-017-6165-2.

11. Plasticizers and bisphenol A, in packaged foods sold in the Tunisian markets: study of their acute in vivo toxicity and their environmental fate.
Beltifa A, Feriani A, Machreki M, Ghorbel A, Ghazouani L, Di Bella G, Van Loco J, Reyns T, Mansour HB.
Environ Sci Pollut Res Int. 2017 Aug 12. doi: 10.1007/s11356-017-9861-0. [Epub ahead of print]

12. Phthalate and bisphenol A exposure during in utero windows of susceptibility in relation to reproductive hormones and pubertal development in girls.
Watkins DJ, Sánchez BN, Téllez-Rojo MM, Lee JM, Mercado-García A, Blank-Goldenberg C, Peterson KE, Meeker JD.
Environ Res. 2017 Aug 8;159:143-151. doi: 10.1016/j.envres.2017.07.051. [Epub ahead of print]

13. Glucuronide and Sulfate Conjugates of Bisphenol A: Chemical Synthesis and Correlation Between Their Urinary Levels and Plasma Bisphenol A Content in Voluntary Human Donors.
Ho KL, Yuen KK, Yau MS, Murphy MB, Wan Y, Fong BM, Tam S, Giesy JP, Leung KS, Lam MH.
Arch Environ Contam Toxicol. 2017 Aug 2. doi: 10.1007/s00244-017-0438-1. [Epub ahead of print]

14. Effects of BPA on global DNA methylation and global histone 3 lysine modifications in SH-SY5Y cells: An epigenetic mechanism linking the regulation of chromatin modifiying genes.
Senyildiz M, Karaman EF, Bas SS, Pirincci PA, Ozden S.
Toxicol In Vitro. 2017 Oct;44:313-321. doi: 10.1016/j.tiv.2017.07.028. Epub 2017 Jul 29.

15. Early life bisphenol A exposure and neurobehavior at 8years of age: Identifying windows of heightened vulnerability.
Stacy SL, Papandonatos GD, Calafat AM, Chen A, Yolton K, Lanphear BP, Braun JM.
Environ Int. 2017 Oct;107:258-265. doi: 10.1016/j.envint.2017.07.021. Epub 2017 Jul 29.

16. Prolonged Exposure to Bisphenol A from Single Dermal Contact Events.
Liu J, Martin JW.
Environ Sci Technol. 2017 Sep 5;51(17):9940-9949. doi: 10.1021/acs.est.7b03093. Epub 2017 Aug 16.

17. Exposure to modern, widespread environmental endocrine disrupting chemicals and their effect on the reproductive potential of women: an overview of current epidemiological evidence.
Karwacka A, Zamkowska D, Radwan M, Jurewicz J.
Hum Fertil (Camb). 2017 Jul 31:1-24. doi: 10.1080/14647273.2017.1358828. [Epub ahead of print]

18. Brominated and organophosphorus flame retardants in body wipes and house dust, and an estimation of house dust hand-loadings in Dutch toddlers.
Sugeng EJ, Leonards PEG, van de Bor M.
Environ Res. 2017 Oct;158:789-797. doi: 10.1016/j.envres.2017.07.035. Epub 2017 Jul 27.

19. Urinary bisphenol A and pubertal development in Chinese school-aged girls: a cross-sectional study.
Miao M, Wang Z, Liu X, Liang H, Zhou Z, Tan H, Yuan W, Li DK.
Environ Health. 2017 Jul 27;16(1):80. doi: 10.1186/s12940-017-0290-9.

20. Prenatal and postnatal bisphenol A exposure and social impairment in 4-year-old children.
Lim YH, Bae S, Kim BN, Shin CH, Lee YA, Kim JI, Hong YC.
Environ Health. 2017 Jul 26;16(1):79. doi: 10.1186/s12940-017-0289-2.

21. Prenatal low-level phenol exposures and birth outcomes in China.
Ding G, Wang C, Vinturache A, Zhao S, Pan R, Han W, Chen L, Wang W, Yuan T, Gao Y, Tian Y.
Sci Total Environ. 2017 Dec 31;607-608:1400-1407. doi: 10.1016/j.scitotenv.2017.07.084. Epub 2017 Jul 19.

22. Prenatal environmental chemical exposures and longitudinal patterns of child neurobehavior.
Braun JM, Yolton K, Stacy SL, Erar B, Papandonatos GD, Bellinger DC, Lanphear BP, Chen A.
Neurotoxicology. 2017 Jul 20;62:192-199. doi: 10.1016/j.neuro.2017.07.027. [Epub ahead of print]

23. Bisphenol A impairs decidualization of human uterine stromal fibroblasts.
Olson MR, Su R, Flaws JA, Fazleabas AT.
Reprod Toxicol. 2017 Jul 17. pii: S0890-6238(17)30509-9. doi: 10.1016/j.reprotox.2017.07.008. [Epub ahead of print]

24. First-Trimester Urinary Bisphenol A Concentration in Relation to Anogenital Distance, an Androgen-Sensitive Measure of Reproductive Development, in Infant Girls.
Barrett ES, Sathyanarayana S, Mbowe O, Thurston SW, Redmon JB, Nguyen RHN, Swan SH.
Environ Health Perspect. 2017 Jul 11;125(7):077008. doi: 10.1289/EHP875.

25. Environmental exposures and pediatric kidney function and disease: A systematic review.
Zheng LY, Sanders AP, Saland JM, Wright RO, Arora M.
Environ Res. 2017 Oct;158:625-648. doi: 10.1016/j.envres.2017.06.029. Epub 2017 Jul 17. Review.

26. Formula Feeding as a Risk Factor for Attention-Deficit/Hyperactivity Disorder: Is Bisphenol A Exposure a Smoking Gun?
Adesman A, Soled D, Rosen L.
J Dev Behav Pediatr. 2017 Sep;38(7):545-551. doi: 10.1097/DBP.0000000000000468.

27. Concurrent exposures to nonylphenol, bisphenol A, phthalates, and organophosphate pesticides on birth outcomes: A cohort study in Taipei, Taiwan.
Huang YF, Pan WC, Tsai YA, Chang CH, Chen PJ, Shao YS, Tsai MS, Hou JW, Lu CA, Chen ML.
Sci Total Environ. 2017 Dec 31;607-608:1126-1135. doi: 10.1016/j.scitotenv.2017.07.092. Epub 2017 Jul 27.

28. Prenatal exposure estimation of BPA and DEHP using integrated external and internal dosimetry: A case study.
Martínez MA, Rovira J, Sharma RP, Nadal M, Schuhmacher M, Kumar V.
Environ Res. 2017 Oct;158:566-575. doi: 10.1016/j.envres.2017.07.016. Epub 2017 Jul 14.

29. Low concentrations of bisphenol A promote human ovarian cancer cell proliferation and glycolysis-based metabolism through the estrogen receptor-α pathway.
Shi XY, Wang Z, Liu L, Feng LM, Li N, Liu S, Gao H.
Chemosphere. 2017 Oct;185:361-367. doi: 10.1016/j.chemosphere.2017.07.027. Epub 2017 Jul 9.

30. Bisphenol A induces COX-2 through the mitogen-activated protein kinase pathway and is associated with levels of inflammation-related markers in elderly populations.
Song H, Park J, Bui PTC, Choi K, Gye MC, Hong YC, Kim JH, Lee YJ.
Environ Res. 2017 Oct;158:490-498. doi: 10.1016/j.envres.2017.07.005. Epub 2017 Jul 11.

31. Prenatal phenolic compounds exposure and neurobehavioral development at 2 and 7years of age.
Lin CC, Chien CJ, Tsai MS, Hsieh CJ, Hsieh WS, Chen PC.
Sci Total Environ. 2017 Dec 15;605-606:801-810. doi: 10.1016/j.scitotenv.2017.06.160. Epub 2017 Jul 3.

33. Bisphenol A and other environmental risk factors for prostate cancer in Hong Kong.
Tse LA, Lee PMY, Ho WM, Lam AT, Lee MK, Ng SSM, He Y, Leung KS, Hartle JC, Hu H, Kan H, Wang F, Ng CF.
Environ Int. 2017 Oct;107:1-7. doi: 10.1016/j.envint.2017.06.012. Epub 2017 Jun 20.

34. Editor's Highlight: Transcriptome Profiling Reveals Bisphenol A Alternatives Activate Estrogen Receptor Alpha in Human Breast Cancer Cells.
Mesnage R, Phedonos A, Arno M, Balu S, Corton JC, Antoniou MN.
Toxicol Sci. 2017 Aug 1;158(2):431-443. doi: 10.1093/toxsci/kfx101.

35. Female exposure to endocrine disrupting chemicals and fecundity: a review.
Mínguez-Alarcón L, Gaskins AJ.
Curr Opin Obstet Gynecol. 2017 Aug;29(4):202-211. doi: 10.1097/GCO.0000000000000373.

36. Bisphenol A and replacements in thermal paper: A review.
Björnsdotter MK, de Boer J, Ballesteros-Gómez A.
Chemosphere. 2017 Sep;182:691-706. doi: 10.1016/j.chemosphere.2017.05.070. Epub 2017 May 15. Review.

37. Phenol Concentrations During Childhood and Subsequent Measures of Adiposity Among Young Girls.
Deierlein AL, Wolff MS, Pajak A, Pinney SM, Windham GC, Galvez MP, Rybak M, Calafat AM, Kushi LH, Biro FM, Teitelbaum SL.
Am J Epidemiol. 2017 Sep 1;186(5):581-592. doi: 10.1093/aje/kwx136.

38. Simultaneous determination of bisphenol A and estrogens in hair samples by liquid chromatography-electrospray tandem mass spectrometry.
Lee C, Kim CH, Kim S, Cho SH.
J Chromatogr B Analyt Technol Biomed Life Sci. 2017 Jul 15;1058:8-13. doi: 10.1016/j.jchromb.2017.05.007. Epub 2017 May 11.

39. Gestational high-fat diet and bisphenol A exposure heightens mammary cancer risk.
Leung YK, Govindarajah V, Cheong A, Veevers J, Song D, Gear R, Zhu X, Ying J, Kendler A, Medvedovic M, Belcher S, Ho SM.
Endocr Relat Cancer. 2017 Jul;24(7):365-378. doi: 10.1530/ERC-17-0006. Epub 2017 May 9.

40. Assumed non-persistent environmental chemicals in human adipose tissue; matrix stability and correlation with levels measured in urine and serum.
Artacho-Cordón F, Arrebola JP, Nielsen O, Hernández P, Skakkebaek NE, Fernández MF, Andersson AM, Olea N, Frederiksen H.
Environ Res. 2017 Jul;156:120-127. doi: 10.1016/j.envres.2017.03.030. Epub 2017 Mar 22.

41. Bisphenol A Represses Dopaminergic Neuron Differentiation from Human Embryonic Stem Cells through Downregulating the Expression of Insulin-like Growth Factor 1.
Huang B, Ning S, Zhang Q, Chen A, Jiang C, Cui Y, Hu J, Li H, Fan G, Qin L, Liu J.
Mol Neurobiol. 2017 Jul;54(5):3798-3812. doi: 10.1007/s12035-016-9898-y. Epub 2016 Jun 7.

42. Interference of dibutylphthalate on human prostate cell viability.
Di Lorenzo M, Forte M, Valiante S, Laforgia V, De Falco M.
Ecotoxicol Environ Saf. 2017 Sep 14;147:565-573. doi: 10.1016/j.ecoenv.2017.09.030. [Epub ahead of print]

43. Cytotoxic effects of commonly used nanomaterials and microplastics on cerebral and epithelial human cells.
Schirinzi GF, Pérez-Pomeda I, Sanchís J, Rossini C, Farré M, Barceló D.
Environ Res. 2017 Sep 9;159:579-587. doi: 10.1016/j.envres.2017.08.043. [Epub ahead of print]

44. Artificial Turf: Contested Terrains for Precautionary Public Health with Particular Reference to Europe?
Watterson A.
Int J Environ Res Public Health. 2017 Sep 12;14(9). pii: E1050. doi: 10.3390/ijerph14091050.

45. Relationship between maternal phthalate exposure and offspring size at birth.
Zhu Y, Wan Y, Zhang B, Zhou A, Huo W, Wu C, Liu H, Jiang Y, Chen Z, Jiang M, Peng Y, Xu S, Xia W, Li Y.
Sci Total Environ. 2017 Sep 6;612:1072-1078. doi: 10.1016/j.scitotenv.2017.08.207. [Epub ahead of print]

46. Use of Monte Carlo analysis in a risk-based prioritization of toxic constituents in house dust.
Ginsberg GL, Belleggia G.
Environ Int. 2017 Sep 7. pii: S0160-4120(17)30392-6. doi: 10.1016/j.envint.2017.06.009. [Epub ahead of print]

47. Effects of the phthalate exposure during three gestation periods on birth weight and their gender differences: A birth cohort study in China.
Zhang YW, Gao H, Mao LJ, Tao XY, Ge X, Huang K, Zhu P, Hao JH, Wang QN, Xu YY, Jin ZX, Sheng J, Xu YQ, Yan SQ, Tao XG, Tao FB.
Sci Total Environ. 2017 Sep 5. pii: S0048-9697(17)32337-9. doi: 10.1016/j.scitotenv.2017.08.319. [Epub ahead of print]

48. Personal Care Product Use in Men and Urinary Concentrations of Select Phthalate Metabolites and Parabens: Results from the Environment And Reproductive Health (EARTH) Study.
Nassan FL, Coull BA, Gaskins AJ, Williams MA, Skakkebaek NE, Ford JB, Ye X, Calafat AM, Braun JM, Hauser R.
Environ Health Perspect. 2017 Aug 18;125(8):087012. doi: 10.1289/EHP1374.

49. Effect modification by apoptosis-related gene polymorphisms on the associations of phthalate exposure with spermatozoa apoptosis and semen quality.
Yang P, Gong YJ, Wang YX, Liang XX, Liu Q, Liu C, Chen YJ, Sun L, Lu WQ, Zeng Q.
Environ Pollut. 2017 Aug 26;231(Pt 1):694-702. doi: 10.1016/j.envpol.2017.08.034. [Epub ahead of print]

50. Brominated flame retardants in black plastic kitchen utensils: Concentrations and human exposure implications.
Kuang J, Abdallah MA, Harrad S.
Sci Total Environ. 2017 Aug 24;610-611:1138-1146. doi: 10.1016/j.scitotenv.2017.08.173. [Epub ahead of print]

51. PLASTICS AND CARDIOVASCULAR HEALTH: PHTHALATES MAY DISRUPT HEART RATE VARIABILITY AND CARDIOVASCULAR REACTIVITY.
Jaimes R 3rd, Swiercz A, Sherman M, Muselimyan N, Marvar P, Posnack NG.
Am J Physiol Heart Circ Physiol. 2017 Aug 25:ajpheart.00364.2017. doi: 10.1152/ajpheart.00364.2017. [Epub ahead of print]

52. Gender- and Age-Specific Relationships Between Phthalate Exposures and Obesity in Shanghai Adults.
Dong R, Zhou T, Chen J, Zhang M, Zhang H, Wu M, Li S, Zhang L, Chen B.
Arch Environ Contam Toxicol. 2017 Aug 24. doi: 10.1007/s00244-017-0441-6. [Epub ahead of print]

53. Ultrasound gel as an unrecognized source of exposure to phthalates and phenols among pregnant women undergoing routine scan.
Messerlian C, Mustieles V, Wylie BJ, Ford JB, Keller M, Ye X, Calafat AM, Williams PL, Hauser R; Environment Team Reproductive Health Study.
Int J Hyg Environ Health. 2017 Aug 14. pii: S1438-4639(17)30333-4. doi: 10.1016/j.ijheh.2017.08.003. [Epub ahead of print]

54. Changes in Urinary Phthalate Metabolite Levels Before and After the Phthalate Contamination Event and Identification of Exposure Sources in a Cohort of Taiwanese Children.
Huang CF, Wang IJ.
Int J Environ Res Public Health. 2017 Aug 19;14(8). pii: E935. doi: 10.3390/ijerph14080935.

55. The environmental injustice of beauty: framing chemical exposures from beauty products as a health disparities concern.
Zota AR, Shamasunder B.
Am J Obstet Gynecol. 2017 Aug 16. pii: S0002-9378(17)30862-1. doi: 10.1016/j.ajog.2017.07.020. [Epub ahead of print]

56. Phthalate metabolites related to infertile biomarkers and infertility in Chinese men.

Liu L, Wang H, Tian M, Zhang J, Panuwet P, D'Souza PE, Barr DB, Huang Q, Xia Y, Shen H.
Environ Pollut. 2017 Aug 12;231(Pt 1):291-300. doi: 10.1016/j.envpol.2017.08.018. [Epub ahead of print]

57. Prenatal phthalate exposures and child temperament at 12 and 24 months.
Singer AB, Wolff MS, Silva MJ, Calafat AM, Engel SM.
Neurotoxicology. 2017 Aug 9;62:248-257. doi: 10.1016/j.neuro.2017.08.002. [Epub ahead of print]

58. Reducing chemical exposures at home: opportunities for action.
Zota AR, Singla V, Adamkiewicz G, Mitro SD, Dodson RE.
J Epidemiol Community Health. 2017 Jul 29. pii: jech-2016-208676. doi: 10.1136/jech-2016-208676. [Epub ahead of print]

59. Children's environmental health based on birth cohort studies of Asia.
Tsai MS, Chen MH, Lin CC, Ng S, Hsieh CJ, Liu CY, Hsieh WS, Chen PC.
Sci Total Environ. 2017 Dec 31;609:396-409. doi: 10.1016/j.scitotenv.2017.07.081. Epub 2017 Jul 26.

60. Urinary concentrations of phthalate metabolites in early pregnancy associated with clinical pregnancy loss in Chinese women.
Gao H, Zhang YW, Huang K, Yan SQ, Mao LJ, Ge X, Xu YQ, Xu YY, Sheng J, Jin ZX, Zhu P, Tao XG, Hao JH, Tao FB.
Sci Rep. 2017 Jul 28;7(1):6800. doi: 10.1038/s41598-017-06450-2.

61. Paternal and maternal preconception urinary phthalate metabolite concentrations and child behavior.
Messerlian C, Bellinger D, Mínguez-Alarcón L, Romano ME, Ford JB, Williams PL, Calafat AM, Hauser R, Braun JM.
Environ Res. 2017 Oct;158:720-728. doi: 10.1016/j.envres.2017.07.032. Epub 2017 Jul 21.

62. Low-Level Prenatal Toxin Exposures and Breastfeeding Duration: A Prospective Cohort Study.
Rosen-Carole CB, Auinger P, Howard CR, Brownell EA, Lanphear BP.
Matern Child Health J. 2017 Jul 22. doi: 10.1007/s10995-017-2346-4. [Epub ahead of print]

63. Phthalate and non-phthalate plasticizers in indoor dust from childcare facilities, salons, and homes across the USA.
Subedi B, Sullivan KD, Dhungana B.
Environ Pollut. 2017 Nov;230:701-708. doi: 10.1016/j.envpol.2017.07.028. Epub 2017 Jul 17.

64. Urinary phthalate metabolites over the first 15months of life and risk assessment - CHECK cohort study.
Kim S, Lee J, Park J, Kim HJ, Cho GJ, Kim GH, Eun SH, Lee JJ, Choi G, Suh E, Choi S, Kim S, Kim SK, Kim YD, Kim SY, Kim S, Eom S, Moon HB, Kim S, Choi K.
Sci Total Environ. 2017 Dec 31;607-608:881-887. doi: 10.1016/j.scitotenv.2017.06.244. Epub 2017 Jul 27.

66. Phthalate esters and childhood asthma: A systematic review and congener-specific meta-analysis.
Li MC, Chen CH, Guo YL.
Environ Pollut. 2017 Oct;229:655-660. doi: 10.1016/j.envpol.2017.06.083. Epub 2017 Jul 7.

67. Analysis of toxicity effects of Di-(2-ethylhexyl) phthalate exposure on human bronchial epithelial 16HBE cells.
Ma Y, Guo Y, Wu S, Lv Z, Zhang Q, Xie X, Ke Y.
Cytotechnology. 2017 Jul 8. doi: 10.1007/s10616-017-0111-6. [Epub ahead of print]

68. The association between total phthalate concentration and non-communicable diseases and chronic inflammation in South Australian urban dwelling men.
Bai PY, Wittert G, Taylor AW, Martin SA, Milne RW, Jenkins AJ, Januszewski AS, Shi Z.
Environ Res. 2017 Oct;158:366-372. doi: 10.1016/j.envres.2017.06.021. Epub 2017 Jul 4.

69. Paternal and maternal urinary phthalate metabolite concentrations and birth weight of singletons conceived by subfertile couples.
Messerlian C, Braun JM, Mínguez-Alarcón L, Williams PL, Ford JB, Mustieles V, Calafat AM, Souter I, Toth T, Hauser R; Environment and Reproductive Health (EARTH) Study Team.
Environ Int. 2017 Oct;107:55-64. doi: 10.1016/j.envint.2017.06.015. Epub 2017 Jun 27.

70. Facts about phthalate toxicity in humans and their occurrence in alcoholic beverages.
Karačonji IB, Jurica SA, Lasić D, Jurica K.
Arh Hig Rada Toksikol. 2017 Jun 27;68(2):81-92. doi: 10.1515/aiht-2017-68-2951.

71. Aldo-keto reductase activity after diethylhexyl phthalate exposure in eutopic and ectopic endometrial cells.
Kim Y, Kim MR, Kim JH, Cho HH.

Eur J Obstet Gynecol Reprod Biol. 2017 Aug;215:215-219. doi: 10.1016/j.ejogrb.2017.05.018. Epub 2017 May 22.

72. Rural and Urban Differences in Air Quality, 2008-2012, and Community Drinking Water Quality, 2010-2015 - United States.
Strosnider H, Kennedy C, Monti M, Yip F.
MMWR Surveill Summ. 2017 Jun 23;66(13):1-10. doi: 10.15585/mmwr.ss6613a1.

73. Impact of phthalate and BPA exposure during in utero windows of susceptibility on reproductive hormones and sexual maturation in peripubertal males.
Watkins DJ, Sánchez BN, Téllez-Rojo MM, Lee JM, Mercado-García A, Blank-Goldenberg C, Peterson KE, Meeker JD.
Environ Health. 2017 Jun 21;16(1):69. doi: 10.1186/s12940-017-0278-5.

74. Exposure of hospitalised pregnant women to plasticizers contained in medical devices.
Marie C, Hamlaoui S, Bernard L, Bourdeaux D, Sautou V, Lémery D, Vendittelli F, Sauvant-Rochat MP.
BMC Womens Health. 2017 Jun 20;17(1):45. doi: 10.1186/s12905-017-0398-7.

75. Prenatal phthalate exposure and altered patterns of DNA methylation in cord blood.
Solomon O, Yousefi P, Huen K, Gunier RB, Escudero-Fung M, Barcellos LF, Eskenazi B, Holland N.
Environ Mol Mutagen. 2017 Jul;58(6):398-410. doi: 10.1002/em.22095. Epub 2017 May 28.

76. An integrated approach to study the risk from landfill soil of Delhi: Chemical analyses, in vitro assays and human risk assessment.
Swati, Ghosh P, Thakur IS.
Ecotoxicol Environ Saf. 2017 Sep;143:120-128. doi: 10.1016/j.ecoenv.2017.05.019. Epub 2017 May 16.

77. Safety evaluation of dermal exposure to phthalates: Metabolism-dependent percutaneous absorption.
Sugino M, Hatanaka T, Todo H, Mashimo Y, Suzuki T, Kobayashi M, Hosoya O, Jinno H, Juni K, Sugibayashi K.
Toxicol Appl Pharmacol. 2017 Aug 1;328:10-17. doi: 10.1016/j.taap.2017.05.009. Epub 2017 May 12.

78. The association of environmental toxicants and autism spectrum disorders in children.
Ye BS, Leung AOW, Wong MH.
Environ Pollut. 2017 Aug;227:234-242. doi: 10.1016/j.envpol.2017.04.039. Epub 2017 May 2. Review.

79. Phthalate exposure, even below US EPA reference doses, was associated with semen quality and reproductive hormones: Prospective MARHCS study in general population.
Chen Q, Yang H, Zhou N, Sun L, Bao H, Tan L, Chen H, Ling X, Zhang G, Huang L, Li L, Ma M, Yang H, Wang X, Zou P, Peng K, Liu T, Shi X, Feng D, Zhou Z, Ao L, Cui Z, Cao J.
Environ Int. 2017 Jul;104:58-68. doi: 10.1016/j.envint.2017.04.005. Epub 2017 Apr 25.

80. The effects of maternal and children phthalate exposure on the neurocognitive function of 6-year-old children.
Kim JI, Hong YC, Shin CH, Lee YA, Lim YH, Kim BN.
Environ Res. 2017 Jul;156:519-525. doi: 10.1016/j.envres.2017.04.003. Epub 2017 Apr 26.

81. Association of prenatal urinary phthalate metabolite concentrations and childhood BMI and obesity.
Harley KG, Berger K, Rauch S, Kogut K, Claus Henn B, Calafat AM, Huen K, Eskenazi B, Holland N.
Pediatr Res. 2017 Sep;82(3):405-415. doi: 10.1038/pr.2017.112. Epub 2017 May 31.

82. Mono-2-ethylhexyl phthalate inhibits human extravillous trophoblast invasion via the PPARγ pathway.
Gao F, Hu W, Li Y, Shen H, Hu J.
Toxicol Appl Pharmacol. 2017 Jul 15;327:23-29. doi: 10.1016/j.taap.2017.04.014. Epub 2017 Apr 14.

83. Long-term di (2-ethylhexyl)-phthalate exposure promotes proliferation and survival of HepG2 cells via activation of NFκB.
Wei N, Feng X, Xie Z, Zhang Y, Feng Y.
Toxicol In Vitro. 2017 Aug;42:86-92. doi: 10.1016/j.tiv.2017.04.015. Epub 2017 Apr 13.

84. Exposure to the plasticizer di(2-ethylhexyl) terephthalate (DEHTP) in Portuguese children - Urinary metabolite levels and estimated daily intakes.
Lessmann F, Correia-Sá L, Calhau C, Domingues VF, Weiss T, Brüning T, Koch HM.
Environ Int. 2017 Jul;104:25-32. doi: 10.1016/j.envint.2017.03.028. Epub 2017 Apr 11.

85. Toxicoanthropology: Phthalate exposure in relation to market access in a remote forager-horticulturalist population.
Sobolewski M, Weiss B, Martin M, Gurven M, Barrett E.

Int J Hyg Environ Health. 2017 Jul;220(5):799-809. doi: 10.1016/j.ijheh.2017.03.009. Epub 2017 Mar 27.

86. Season-dependent concentrations of urinary phthalate metabolites among Chinese pregnant women: Repeated measures analysis.
Gao H, Zhu YD, Xu YY, Zhang YW, Yao HY, Sheng J, Jin ZX, Ren LL, Huang K, Hao JH, Tao FB.
Environ Int. 2017 Jul;104:110-117. doi: 10.1016/j.envint.2017.03.021. Epub 2017 Apr 4.

87. Intellectual evaluation of children exposed to phthalate-tainted products after the 2011 Taiwan phthalate episode.
Huang PC, Tsai CH, Chen CC, Wu MT, Chen ML, Wang SL, Chen BH, Lee CC, Jaakkola JJK, Wu WC, Chen MK, Hsiung CA, Group R.
Environ Res. 2017 Jul;156:158-166. doi: 10.1016/j.envres.2017.03.016. Epub 2017 Mar 27.

88. Analytical Methodologies for the Assessment of Phthalate Exposure in Humans.
Tsochatzis ED, Tzimou-Tsitouridou R, Gika HG.
Crit Rev Anal Chem. 2017 Jul 4;47(4):279-297. doi: 10.1080/10408347.2016.1273754. Epub 2016 Dec 22. Review.

89. Analytical method for urinary metabolites as biomarkers for monitoring exposure to phthalates by gas chromatography/mass spectrometry.
Yoshida T.
Biomed Chromatogr. 2017 Jul;31(7). doi: 10.1002/bmc.3910. Epub 2017 Jan 24.

90. Investigating into composition, distribution, sources and health risk of phthalic acid esters in street dust of Xi'an City, Northwest China.
Wang L, Zhang W, Tao W, Wang L, Shi X, Lu X.
Environ Geochem Health. 2017 Aug;39(4):865-877. doi: 10.1007/s10653-016-9856-7. Epub 2016 Jul 19.

91. Photosensitized methyl paraben induces apoptosis via caspase dependent pathway under ambient UVB exposure in human skin cells.
Dubey D, Chopra D, Singh J, Srivastav AK, Kumari S, Verma A, Ray RS.
Food Chem Toxicol. 2017 Oct;108(Pt A):171-185. doi: 10.1016/j.fct.2017.07.056. Epub 2017 Jul 29.

92. Occurrence of and human exposure to parabens, benzophenones, benzotriazoles, triclosan and triclocarban in outdoor swimming pool water in Changsha, China.
Lu J, Mao H, Li H, Wang Q, Yang Z.
Sci Total Environ. 2017 Dec 15;605-606:1064-1069. doi: 10.1016/j.scitotenv.2017.06.135. Epub 2017 Jul 11.

93. Exposure to benzophenones, parabens and triclosan among pregnant women in different trimesters.
Zhao H, Huo W, Li J, Ma X, Xia W, Pang Z, Xie M, Xu S, Cai Z.
Sci Total Environ. 2017 Dec 31;607-608:578-585. doi: 10.1016/j.scitotenv.2017.07.003. Epub 2017 Jul 27.

94. Regulatory risk assessments: Is there a need to reduce uncertainty and enhance robustness? Update on propylparaben in relation to its EU regulatory status.
Snodin D.
Hum Exp Toxicol. 2017 Oct;36(10):1007-1014. doi: 10.1177/0960327117718042. Epub 2017 Jul 11.

95. Human Semen Quality, Sperm DNA Damage, and the Level of Reproductive Hormones in Relation to Urinary Concentrations of Parabens.
Jurewicz J, Radwan M, Wielgomas B, Dziewirska E, Karwacka A, Klimowska A, Kałużny P, Radwan P, Bochenek M, Hanke W.
J Occup Environ Med. 2017 Jul 7. doi: 10.1097/JOM.0000000000001106. [Epub ahead of print]

96. Methylparaben and butylparaben alter multipotent mesenchymal stem cell fates towards adipocyte lineage.
Hu P, Overby H, Heal E, Wang S, Chen J, Shen CL, Zhao L.
Toxicol Appl Pharmacol. 2017 Aug 15;329:48-57. doi: 10.1016/j.taap.2017.05.019. Epub 2017 May 17.

97. Prenatal exposure to perfluoroalkyl substances and birth outcomes in a Spanish birth cohort.
Manzano-Salgado CB, Casas M, Lopez-Espinosa MJ, Ballester F, Iñiguez C, Martinez D, Costa O, Santa-Marina L, Pereda-Pereda E, Schettgen T, Sunyer J, Vrijheid M.
Environ Int. 2017 Sep 13;108:278-284. doi: 10.1016/j.envint.2017.09.006. [Epub ahead of print]

98. Serum perfluoroalkyl substances and cardiometabolic consequences in adolescents exposed to the World Trade Center disaster and a matched comparison group.

Koshy TT, Attina TM, Ghassabian A, Gilbert J, Burdine LK, Marmor M, Honda M, Chu DB, Han X, Shao Y, Kannan K, Urbina EM, Trasande L.
Environ Int. 2017 Sep 7. pii: S0160-4120(17)30985-6. doi: 10.1016/j.envint.2017.08.003. [Epub ahead of print]

99. Perfluoroalkyl substances (PFASs) in breast milk from Korea: Time-course trends, influencing factors, and infant exposure.
Lee S, Kim S, Park J, Kim HJ, Choi G, Choi S, Kim S, Kim SY, Kim S, Choi K, Moon HB.
Sci Total Environ. 2017 Aug 30;612:286-292. doi: 10.1016/j.scitotenv.2017.08.094. [Epub ahead of print]

100. Cytotoxicity of novel fluorinated alternatives to long-chain perfluoroalkyl substances to human liver cell line and their binding capacity to human liver fatty acid binding protein.
Sheng N, Cui R, Wang J, Guo Y, Wang J, Dai J.
Arch Toxicol. 2017 Sep 1. doi: 10.1007/s00204-017-2055-1. [Epub ahead of print]

101. Exposure of children aged 0-7 years to perfluorinated compounds in Foshan, China.
Zhang R, Wei Q, Li M, Li Z, Lin W, Ma A, Zhou Z.
Environ Sci Pollut Res Int. 2017 Aug 24. doi: 10.1007/s11356-017-9922-4. [Epub ahead of print]

102. Exposure to polybrominated diphenyl ethers and perfluoroalkyl substances in a remote population of Alaska Natives.
Byrne S, Seguinot-Medina S, Miller P, Waghiyi V, von Hippel FA, Buck CL, Carpenter DO.
Environ Pollut. 2017 Aug 14;231(Pt 1):387-395. doi: 10.1016/j.envpol.2017.08.020. [Epub ahead of print]

103. Historical human exposure to perfluoroalkyl acids in the United States and Australia reconstructed from biomonitoring data using population-based pharmacokinetic modelling.
Gomis MI, Vestergren R, MacLeod M, Mueller JF, Cousins IT.
Environ Int. 2017 Aug 14;108:92-102. doi: 10.1016/j.envint.2017.08.002. [Epub ahead of print]

104. Perfluoroalkyl substance exposure and urine CC16 levels among asthmatics: A case-control study of children.
Zhou Y, Bao WW, Qian ZM, Dee Geiger S, Parrish KL, Yang BY, Lee YL, Dong GH.
Environ Res. 2017 Aug 9;159:158-163. doi: 10.1016/j.envres.2017.08.005. [Epub ahead of print]

105. Global distribution of perfluorochemicals (PFCs) in potential human exposure source-A review.
Jian JM, Guo Y, Zeng L, Liang-Ying L, Lu X, Wang F, Zeng EY.
Environ Int. 2017 Aug 8;108:51-62. doi: 10.1016/j.envint.2017.07.024. [Epub ahead of print] Review.

106. Endocrine disruptors induce perturbations in endoplasmic reticulum and mitochondria of human pluripotent stem cell derivatives.
Rajamani U, Gross AR, Ocampo C, Andres AM, Gottlieb RA, Sareen D.
Nat Commun. 2017 Aug 9;8(1):219. doi: 10.1038/s41467-017-00254-8.

107. Perfluoroalkyl substances in human bone: concentrations in bones and effects on bone cell differentiation.
Koskela A, Koponen J, Lehenkari P, Viluksela M, Korkalainen M, Tuukkanen J.
Sci Rep. 2017 Jul 28;7(1):6841. doi: 10.1038/s41598-017-07359-6.

108. Gestational diabetes and offspring birth size at elevated environmental pollutant exposures.
Valvi D, Oulhote Y, Weihe P, Dalgård C, Bjerve KS, Steuerwald U, Grandjean P.
Environ Int. 2017 Oct;107:205-215. doi: 10.1016/j.envint.2017.07.016. Epub 2017 Jul 25.

109. Serum Vaccine Antibody Concentrations in Adolescents Exposed to Perfluorinated Compounds.
Grandjean P, Heilmann C, Weihe P, Nielsen F, Mogensen UB, Budtz-Jørgensen E.
Environ Health Perspect. 2017 Jul 26;125(7):077018. doi: 10.1289/EHP275.

110. Airborne persistent toxic substances (PTSs) in China: occurrence and its implication associated with air pollution.
Wang P, Zhang Q, Li Y, Matsiko J, Zhang Y, Jiang G.
Environ Sci Process Impacts. 2017 Aug 16;19(8):983-999. doi: 10.1039/c7em00187h. Review.

111. Closing the Mass Balance on Fluorine on Papers and Textiles.
Robel AE, Marshall K, Dickinson M, Lunderberg D, Butt C, Peaslee G, Stapleton HM, Field JA.
Environ Sci Technol. 2017 Aug 15;51(16):9022-9032. doi: 10.1021/acs.est.7b02080. Epub 2017 Jul 28.

112. The impact of prenatal perfluoroalkyl substances exposure on neonatal and child growth.
Chen MH, Ng S, Hsieh CJ, Lin CC, Hsieh WS, Chen PC.

Sci Total Environ. 2017 Dec 31;607-608:669-675. doi: 10.1016/j.scitotenv.2017.06.273. Epub 2017 Jul 27.

113. Serum concentrations of per- and poly-fluoroalkyl substances and factors associated with exposure in the general adult population in South Korea.
Lee JH, Lee CK, Suh CH, Kang HS, Hong CP, Choi SN.
Int J Hyg Environ Health. 2017 Aug;220(6):1046-1054. doi: 10.1016/j.ijheh.2017.06.005. Epub 2017 Jun 24.

114. The occurrence, exposure and risk assessment of perfluoroalkyl acids in food from mainland, China.
Wang X, Zhang R, Zhang H, Wang Y.
Food Addit Contam Part A Chem Anal Control Expo Risk Assess. 2017 Jul 11:1-9. doi: 10.1080/19440049.2017.1347282. [Epub ahead of print]

115. Perfluoroalkyl Substances during Pregnancy and Offspring Weight and Adiposity at Birth: Examining Mediation by Maternal Fasting Glucose in the Healthy Start Study.
Starling AP, Adgate JL, Hamman RF, Kechris K, Calafat AM, Ye X, Dabelea D.
Environ Health Perspect. 2017 Jun 26;125(6):067016. doi: 10.1289/EHP641.

116. Estimating human exposure to perfluoroalkyl acids via solid food and drinks: Implementation and comparison of different dietary assessment methods.
Papadopoulou E, Poothong S, Koekkoek J, Lucattini L, Padilla-Sánchez JA, Haugen M, Herzke D, Valdersnes S, Maage A, Cousins IT, Leonards PEG, Småstuen Haug L.
Environ Res. 2017 Oct;158:269-276. doi: 10.1016/j.envres.2017.06.011. Epub 2017 Jun 26.

117. Plasma Perfluoroalkyl and Polyfluoroalkyl Substances Concentration and Menstrual Cycle Characteristics in Preconception Women.
Zhou W, Zhang L, Tong C, Fang F, Zhao S, Tian Y, Tao Y, Zhang J; Shanghai Birth Cohort Study.
Environ Health Perspect. 2017 Jun 22;125(6):067012. doi: 10.1289/EHP1203.

118. Exposure to Perfluorinated Alkyl Substances and Health Outcomes in Children: A Systematic Review of the Epidemiologic Literature.
Rappazzo KM, Coffman E, Hines EP.
Int J Environ Res Public Health. 2017 Jun 27;14(7). pii: E691. doi: 10.3390/ijerph14070691.

119. Maternal serum PFOA concentration and DNA methylation in cord blood: A pilot study.
Kingsley SL, Kelsey KT, Butler R, Chen A, Eliot MN, Romano ME, Houseman A, Koestler DC, Lanphear BP, Yolton K, Braun JM.
Environ Res. 2017 Oct;158:174-178. doi: 10.1016/j.envres.2017.06.013. Epub 2017 Jun 20.

120. Per- and polyfluoroalkyl substances in human serum and urine samples from a residentially exposed community.
Worley RR, Moore SM, Tierney BC, Ye X, Calafat AM, Campbell S, Woudneh MB, Fisher J.
Environ Int. 2017 Sep;106:135-143. doi: 10.1016/j.envint.2017.06.007. Epub 2017 Jun 20.

121. Perfluorinated alkyl substances in Spanish adults: Geographical distribution and determinants of exposure.
Bartolomé M, Gallego-Picó A, Cutanda F, Huetos O, Esteban M, Pérez-Gómez B; Bioambient.es, Castaño A.
Sci Total Environ. 2017 Dec 15;603-604:352-360. doi: 10.1016/j.scitotenv.2017.06.031. Epub 2017 Jun 23.

122. Exposure to PFOA and PFOS and fetal growth: a critical merging of toxicological and epidemiological data.
Negri E, Metruccio F, Guercio V, Tosti L, Benfenati E, Bonzi R, La Vecchia C, Moretto A.
Crit Rev Toxicol. 2017 Jul;47(6):482-508. doi: 10.1080/10408444.2016.1271972. Epub 2017 Feb 15. Review.

123. Occurrence and incidence of 18 per- and polyfluoroalkyl compounds in edible oils commonly consumed in Guiyang, China.
Yang H, Li G, Rao Z, Guo F, Li Z, Xie F, Tan H.
Food Addit Contam Part A Chem Anal Control Expo Risk Assess. 2017 Sep;34(9):1573-1583. doi: 10.1080/19440049.2017.1339330. Epub 2017 Jun 28.

124. Crop bioaccumulation and human exposure of perfluoroalkyl acids through multi-media transport from a mega fluorochemical industrial park, China.
Liu Z, Lu Y, Shi Y, Wang P, Jones K, Sweetman AJ, Johnson AC, Zhang M, Zhou Y, Lu X, Su C, Sarvajayakesavaluc S, Khan K.
Environ Int. 2017 Sep;106:37-47. doi: 10.1016/j.envint.2017.05.014. Epub 2017 May 27.

125. Airborne Precursors Predict Maternal Serum Perfluoroalkyl Acid Concentrations.
Makey CM, Webster TF, Martin JW, Shoeib M, Harner T, Dix-Cooper L, Webster GM.

Environ Sci Technol. 2017 Jul 5;51(13):7667-7675. doi: 10.1021/acs.est.7b00615. Epub 2017 Jun 13.

126. Per- and polyfluoroalkyl substances (PFAS) in American Red Cross adult blood donors, 2000-2015.
Olsen GW, Mair DC, Lange CC, Harrington LM, Church TR, Goldberg CL, Herron RM, Hanna H, Nobiletti JB, Rios JA, Reagen WK, Ley CA.
Environ Res. 2017 Aug;157:87-95. doi: 10.1016/j.envres.2017.05.013. Epub 2017 May 18.

127. Prenatal exposure to perfluoroalkyl acids and prevalence of infectious diseases up to 4years of age.
Goudarzi H, Miyashita C, Okada E, Kashino I, Chen CJ, Ito S, Araki A, Kobayashi S, Matsuura H, Kishi R.
Environ Int. 2017 Jul;104:132-138. doi: 10.1016/j.envint.2017.01.024. Epub 2017 Apr 7.

128. Association of prenatal exposure to perfluoroalkyl substances with cord blood adipokines and birth size: The Hokkaido Study on environment and children's health.
Minatoya M, Itoh S, Miyashita C, Araki A, Sasaki S, Miura R, Goudarzi H, Iwasaki Y, Kishi R.
Environ Res. 2017 Jul;156:175-182. doi: 10.1016/j.envres.2017.03.033. Epub 2017 Mar 27.

129. Long-term consequences of prenatal stress and neurotoxicants exposure on neurodevelopment.
Antonelli MC, Pallarés ME, Ceccatelli S, Spulber S.
Prog Neurobiol. 2017 Aug;155:21-35. doi: 10.1016/j.pneurobio.2016.05.005. Epub 2016 May 25. Review.

130. Systematic review of the literature on triclosan and health outcomes in humans.
Goodman M, Naiman DQ, LaKind JS.
Crit Rev Toxicol. 2017 Jul 25:1-51. doi: 10.1080/10408444.2017.1350138. [Epub ahead of print]

131. Maternal Urinary Triclosan Concentration in Relation to Maternal and Neonatal Thyroid Hormone Levels: A Prospective Study.
Wang X, Ouyang F, Feng L, Wang X, Liu Z, Zhang J.
Environ Health Perspect. 2017 Jun 27;125(6):067017. doi: 10.1289/EHP500.

132. Urinary triclosan concentrations and diminished ovarian reserve among women undergoing treatment in a fertility clinic.
Mínguez-Alarcón L, Christou G, Messerlian C, Williams PL, Carignan CC, Souter I, Ford JB, Calafat AM, Hauser R; EARTH Study Team.
Fertil Steril. 2017 Aug;108(2):312-319. doi: 10.1016/j.fertnstert.2017.05.020. Epub 2017 Jun 2.

133. Risk assessment of triclosan in the global environment using a probabilistic approach.
Guo J, Iwata H.
Ecotoxicol Environ Saf. 2017 Sep;143:111-119. doi: 10.1016/j.ecoenv.2017.05.020. Epub 2017 May 16.

134. Evaluation of triclosan in Minnesota lakes and rivers: Part II - human health risk assessment.
Yost LJ, Barber TR, Gentry PR, Bock MJ, Lyndall JL, Capdevielle MC, Slezak BP.
Ecotoxicol Environ Saf. 2017 Aug;142:588-596. doi: 10.1016/j.ecoenv.2017.04.048. Epub 2017 May 5.

135. Urinary triclosan concentrations during pregnancy and birth outcomes.
Etzel TM, Calafat AM, Ye X, Chen A, Lanphear BP, Savitz DA, Yolton K, Braun JM.
Environ Res. 2017 Jul;156:505-511. doi: 10.1016/j.envres.2017.04.015. Epub 2017 Apr 26.

136. Evaluating the effects of triclosan on 3 field crops grown in 4 formulations of biosolids.
Shahmohamadloo RS, Lissemore L, Prosser RS, Sibley PK.
Environ Toxicol Chem. 2017 Jul;36(7):1896-1908. doi: 10.1002/etc.3712. Epub 2017 Feb 13.

137. Prenatal Serum Concentrations of Brominated Flame Retardants and Autism Spectrum Disorder and Intellectual Disability in the Early Markers of Autism Study: A Population-Based Case-Control Study in California.
Lyall K, Croen LA, Weiss LA, Kharrazi M, Traglia M, Delorenze GN, Windham GC.
Environ Health Perspect. 2017 Aug 30;125(8):087023. doi: 10.1289/EHP1079.

138. SIZE-RESOLVED PARTICLE MEASUREMENTS OF POLYBROMINATED DIPHENYL ETHERS INDOORS: IMPLICATIONS FOR SOURCES AND HUMAN EXPOSURE.
Richman KE, Butt CM, Young CJ.
Environ Toxicol Chem. 2017 Sep 11. doi: 10.1002/etc.3981. [Epub ahead of print]

139. A Human Mixture Risk Assessment for Neurodevelopmental Toxicity Associated with Polybrominated Diphenyl Ethers Used as Flame Retardants.
Martin OV, Evans RM, Faust M, Kortenkamp A.

Environ Health Perspect. 2017 Aug 23;125(8):087016. doi: 10.1289/EHP826.

140. Recycling of plastic waste: Screening for brominated flame retardants (BFRs).
Pivnenko K, Granby K, Eriksson E, Astrup TF.
Waste Manag. 2017 Aug 30. pii: S0956-053X(17)30616-5. doi: 10.1016/j.wasman.2017.08.038. [Epub ahead of print]

141. Children's exposure to brominated flame retardants in indoor environments - A review.
Malliari E, Kalantzi OI.
Environ Int. 2017 Aug 28;108:146-169. doi: 10.1016/j.envint.2017.08.011. [Epub ahead of print] Review.

142. Urinary Concentrations of Organophosphate Flame Retardant Metabolites and Pregnancy Outcomes among Women Undergoing in Vitro Fertilization.
Carignan CC, Mínguez-Alarcón L, Butt CM, Williams PL, Meeker JD, Stapleton HM, Toth TL, Ford JB, Hauser R; EARTH Study Team.
Environ Health Perspect. 2017 Aug 25;125(8):087018. doi: 10.1289/EHP1021.

143. Biotransformation of the Flame Retardant 1,2-Dibromo-4-(1,2-dibromoethyl)cyclohexane (TBECH) in Vitro by Human Liver Microsomes.
Nguyen KH, Abou-Elwafa Abdallah M, Moehring T, Harrad S.
Environ Sci Technol. 2017 Sep 7. doi: 10.1021/acs.est.7b02834. [Epub ahead of print]

144. Legacy and alternative halogenated flame retardants in human milk in Europe: Implications for children's health.
Čechová E, Vojta Š, Kukučka P, Kočan A, Trnovec T, Murínová ĽP, de Cock M, van de Bor M, Askevold J, Eggesbø M, Scheringer M.
Environ Int. 2017 Aug 23;108:137-145. doi: 10.1016/j.envint.2017.08.008. [Epub ahead of print]

145. Liquid Chromatography-Tandem Mass Spectrometry Analysis of Biomarkers of Exposure to Phosphorus Flame Retardants in Wastewater to Monitor Community-Wide Exposure.
Been F, Bastiaensen M, Lai FY, van Nuijs ALN, Covaci A.
Anal Chem. 2017 Sep 7. doi: 10.1021/acs.analchem.7b02705. [Epub ahead of print]

146. Distribution of polybrominated diphenyl ethers in breast milk, cord blood and placentas: a systematic review.
Tang J, Zhai JX.
Environ Sci Pollut Res Int. 2017 Aug 22. doi: 10.1007/s11356-017-9821-8. [Epub ahead of print]

147. Emerging and legacy flame retardants in indoor dust from East China.
Peng C, Tan H, Guo Y, Wu Y, Chen D.
Chemosphere. 2017 Nov;186:635-643. doi: 10.1016/j.chemosphere.2017.08.038. Epub 2017 Aug 11.

**148. Developmental PBDE Exposure and IQ/ADHD in Childhood: A Systematic Review and Meta-analysis.
Lam J, Lanphear BP, Bellinger D, Axelrad DA, McPartland J, Sutton P, Davidson L, Daniels N, Sen S, Woodruff TJ.
Environ Health Perspect. 2017 Aug 3;125(8):086001. doi: 10.1289/EHP1632. Review.**

149. Developmental neurotoxicity and autism: A potential link between indoor neuroactive pollutants and the curious birth order risk factor.
Gray WA, Billock VA.
Int J Dev Neurosci. 2017 Nov;62:32-36. doi: 10.1016/j.ijdevneu.2017.07.004. Epub 2017 Jul 29. Review.

150. Use of a simple pharmacokinetic model to study the impact of breast-feeding on infant and toddler body burdens of PCB 153, BDE 47, and DDE.
Lorber M, Toms LL.
Chemosphere. 2017 Oct;185:1081-1089. doi: 10.1016/j.chemosphere.2017.07.118. Epub 2017 Jul 25.

**151. Demographic and dietary risk factors in relation to urinary metabolites of organophosphate flame retardants in toddlers.
Thomas MB, Stapleton HM, Dills RL, Violette HD, Christakis DA, Sathyanarayana S.
Chemosphere. 2017 Oct;185:918-925. doi: 10.1016/j.chemosphere.2017.07.015. Epub 2017 Jul 4.**

152. Flame retardants on the surface of phones and personal computers.
Zheng X, Sun R, Qiao L, Guo H, Zheng J, Mai B.
Sci Total Environ. 2017 Dec 31;609:541-545. doi: 10.1016/j.scitotenv.2017.07.202. Epub 2017 Jul 27.

153. Risk assessment and Biomonitoring Equivalent for 2-ethylhexyl-2,3,4,5 tetrabromobenzoate (TBB) and tetrabromobenzoic acid (TBBA).

Hays SM, Kirman CR.
Regul Toxicol Pharmacol. 2017 Oct;89:186-192. doi: 10.1016/j.yrtph.2017.07.022. Epub 2017 Jul 25.

154. Spatiotemporal analysis of human exposure to halogenated flame retardant chemicals.
Allgood JM, Vahid KS, Jeeva K, Tang IW, Ogunseitan OA.
Sci Total Environ. 2017 Dec 31;609:272-276. doi: 10.1016/j.scitotenv.2017.07.157. Epub 2017 Jul 24.

155. Associations between flame retardant applications in furniture foam, house dust levels, and residents' serum levels.
Hammel SC, Hoffman K, Lorenzo AM, Chen A, Phillips AL, Butt CM, Sosa JA, Webster TF, Stapleton HM.
Environ Int. 2017 Oct;107:181-189. doi: 10.1016/j.envint.2017.07.015. Epub 2017 Jul 24.

156. Preparation and performance features of wristband samplers and considerations for chemical exposure assessment.
Anderson KA, Points GL 3rd, Donald CE, Dixon HM, Scott RP, Wilson G, Tidwell LG, Hoffman PD, Herbstman JB, O'Connell SG.
J Expo Sci Environ Epidemiol. 2017 Jul 26. doi: 10.1038/jes.2017.9. [Epub ahead of print]

157. Multi-analyte method development for analysis of brominated flame retardants (BFRs) and PBDE metabolites in human serum.
Lu D, Jin Y, Feng C, Wang D, Lin Y, Qiu X, Xu Q, Wen Y, She J, Wang G, Zhou Z.
Anal Bioanal Chem. 2017 Jul 24. doi: 10.1007/s00216-017-0476-6. [Epub ahead of print]

158. Relative toxicological ranking of eight polybrominated diphenyl ether congeners using cytotoxicity, chemical properties and exposure data.
Tait S, Perugini M, La Rocca C.
Food Chem Toxicol. 2017 Oct;108(Pt A):74-84. doi: 10.1016/j.fct.2017.07.041. Epub 2017 Jul 21.

159. Legacy and novel brominated flame retardants in interior car dust - Implications for human exposure.
Besis A, Christia C, Poma G, Covaci A, Samara C.
Environ Pollut. 2017 Nov;230:871-881. doi: 10.1016/j.envpol.2017.07.032. Epub 2017 Jul 20.

160. Childhood polybrominated diphenyl ether (PBDE) exposure and neurobehavior in children at 8 years.
Vuong AM, Yolton K, Xie C, Webster GM, Sjödin A, Braun JM, Dietrich KN, Lanphear BP, Chen A.
Environ Res. 2017 Oct;158:677-684. doi: 10.1016/j.envres.2017.07.028. Epub 2017 Jul 19.

161. Polybrominated diphenyl ether flame retardant concentrations in faeces from young children in Queensland, Australia and associations with environmental and behavioural factors.
English K, Chen Y, Toms LM, Jagals P, Ware RS, Mueller JF, Sly PD.
Environ Res. 2017 Oct;158:669-676. doi: 10.1016/j.envres.2017.07.022. Epub 2017 Jul 19.

162. The occurrence and spatial-temporal distribution of tetrabromobisphenol A in the coastal intertidal zone of Qingdao in China, with a focus on toxicity assessment by biological monitoring.
Gong WJ, Zhu LY, Jiang TT, Han C.
Chemosphere. 2017 Oct;185:462-467. doi: 10.1016/j.chemosphere.2017.07.033. Epub 2017 Jul 10.

163. Probing the relationship between external and internal human exposure of organophosphate flame retardants using pharmacokinetic modelling.
Bui TT, Xu F, Van den Eede N, Cousins AP, Covaci A, Cousins IT.
Environ Pollut. 2017 Nov;230:550-560. doi: 10.1016/j.envpol.2017.07.002. Epub 2017 Jul 11.

164. Occurrence and fate of organophosphate ester flame retardants and plasticizers in indoor air and dust of Nepal: Implication for human exposure.
Yadav IC, Devi NL, Zhong G, Li J, Zhang G, Covaci A.
Environ Pollut. 2017 Oct;229:668-678. doi: 10.1016/j.envpol.2017.06.089. Epub 2017 Jul 11.

165. New insight into the distribution pattern, levels, and risk diagnosis of FRs in indoor and outdoor air at low- and high-altitude zones of Pakistan: Implications for sources and exposure.
Khan MU, Besis A, Li J, Zhang G, Malik RN.
Chemosphere. 2017 Oct;184:1372-1387. doi: 10.1016/j.chemosphere.2017.06.056. Epub 2017 Jun 26.

166. Human Exposure to Legacy and Emerging Halogenated Flame Retardants via Inhalation and Dust Ingestion in a Norwegian Cohort.
Tay JH, Sellström U, Papadopoulou E, Padilla-Sánchez JA, Haug LS, de Wit CA.

Environ Sci Technol. 2017 Jul 18;51(14):8176-8184. doi: 10.1021/acs.est.7b02114. Epub 2017 Jun 29.

167. The flame retardant DE-71 (a mixture of polybrominated diphenyl ethers) inhibits human differentiated thyroid cell function in vitro.
Kronborg TM, Hansen JF, Rasmussen ÅK, Vorkamp K, Nielsen CH, Frederiksen M, Hofman-Bang J, Hahn CH, Ramhøj L, Feldt-Rasmussen U.
PLoS One. 2017 Jun 23;12(6):e0179858. doi: 10.1371/journal.pone.0179858. eCollection 2017.

168. Effects of organophosphorus flame retardant TDCPP on normal human corneal epithelial cells: Implications for human health.
Xiang P, Liu RY, Li C, Gao P, Cui XY, Ma LQ.
Environ Pollut. 2017 Nov;230:22-30. doi: 10.1016/j.envpol.2017.06.036. Epub 2017 Jun 20.

169. Organophosphate esters flame retardants in the indoor environment.
Vykoukalová M, Venier M, Vojta Š, Melymuk L, Bečanová J, Romanak K, Prokeš R, Okeme JO, Saini A, Diamond ML, Klánová J.
Environ Int. 2017 Sep;106:97-104. doi: 10.1016/j.envint.2017.05.020.

170. Polybrominated diphenyl ethers (PBDEs) in US meat and poultry: 2012-13 levels, trends and estimated consumer exposures.
Lupton SJ, Hakk H.
Food Addit Contam Part A Chem Anal Control Expo Risk Assess. 2017 Sep;34(9):1584-1595. doi: 10.1080/19440049.2017.1340675. Epub 2017 Jul 11.

171. Human cost burden of exposure to endocrine disrupting chemicals. A critical review.
Bond GG, Dietrich DR.
Arch Toxicol. 2017 Aug;91(8):2745-2762. doi: 10.1007/s00204-017-1985-y. Epub 2017 May 20. Review.

172. Emerging and legacy flame retardants in UK human milk and food suggest slow response to restrictions on use of PBDEs and HBCDD.
Tao F, Abou-Elwafa Abdallah M, Ashworth DC, Douglas P, Toledano MB, Harrad S.
Environ Int. 2017 Aug;105:95-104. doi: 10.1016/j.envint.2017.05.010. Epub 2017 May 17.

173. Influence of storage vial material on measurement of organophosphate flame retardant metabolites in urine.
Carignan CC, Butt CM, Stapleton HM, Meeker JD, Minguez-Alarcón L, Williams PL, Hauser R.
Chemosphere. 2017 Aug;181:440-446. doi: 10.1016/j.chemosphere.2017.04.083. Epub 2017 Apr 19.

174. Exploring adduct formation between human serum albumin and eleven organophosphate ester flame retardants and plasticizers using MALDI-TOF/TOF and LC-Q/TOF.
Chu S, Baker MR, Leong G, Letcher RJ, Gee SJ, Hammock BD, Li QX.
Chemosphere. 2017 Aug;180:169-177. doi: 10.1016/j.chemosphere.2017.03.124. Epub 2017 Mar 31.

175. Flame retardants and their metabolites in the homes and urine of pregnant women residing in California (the CHAMACOS cohort).
Castorina R, Butt C, Stapleton HM, Avery D, Harley KG, Holland N, Eskenazi B, Bradman A.
Chemosphere. 2017 Jul;179:159-166. doi: 10.1016/j.chemosphere.2017.03.076. Epub 2017 Mar 22.

176. Human exposure to HBCD and TBBPA via indoor dust in Korea: Estimation of external exposure and body burden.
Barghi M, Shin ES, Kim JC, Choi SD, Chang YS.
Sci Total Environ. 2017 Sep 1;593-594:779-786. doi: 10.1016/j.scitotenv.2017.03.200. Epub 2017 Mar 30.

177. Antimony and sleep-related disorders: NHANES 2005-2008.
Scinicariello F, Buser MC, Feroe AG, Attanasio R.
Environ Res. 2017 Jul;156:247-252. doi: 10.1016/j.envres.2017.03.036. Epub 2017 Mar 28.

178. Vehicles as outdoor BFR sources: Evidence from an investigation of BFR occurrence in road dust.
Cao Z, Zhao L, Kuang J, Chen Q, Zhu G, Zhang K, Wang S, Wu P, Zhang X, Wang X, Harrad S, Sun J.
Chemosphere. 2017 Jul;179:29-36. doi: 10.1016/j.chemosphere.2017.03.095. Epub 2017 Mar 25.

179. Influence of sampling approach on concentrations of legacy and "novel" brominated flame retardants in indoor dust.
Al-Omran LS, Harrad S.
Chemosphere. 2017 Jul;178:51-58. doi: 10.1016/j.chemosphere.2017.02.096. Epub 2017 Feb 22.

180. Butyltin compounds alter secretion of interleukin 6 from human immune cells.

Brown S, Wilburn W, Martin T, Whalen M.
J Appl Toxicol. 2017 Aug 24. doi: 10.1002/jat.3514. [Epub ahead of print]

181. Frontiers in endocrine disruption: Impacts of organotin on the hypothalamus-pituitary-thyroid axis.
Santos-Silva AP, Andrade MN, Pereira-Rodrigues P, Paiva-Melo FD, Soares P, Graceli JB, Dias GRM, Ferreira ACF, de Carvalho DP, Miranda-Alves L.
Mol Cell Endocrinol. 2017 Jul 31. pii: S0303-7207(17)30418-5. doi: 10.1016/j.mce.2017.07.038. [Epub ahead of print] Review.

182. Long term impact of the endocrine disruptor tributyltin on male fertility following a single acute exposure.
Mitra S, Srivastava A, Khandelwal S.
Environ Toxicol. 2017 Oct;32(10):2295-2304. doi: 10.1002/tox.22446. Epub 2017 Jul 14.

183. Emerging Estrogenic Pollutants in the Aquatic Environment and Breast Cancer.
Lecomte S, Habauzit D, Charlier TD, Pakdel F.
Genes (Basel). 2017 Sep 15;8(9). pii: E229. doi: 10.3390/genes8090229. Review.

184. High-Throughput Analysis of Ovarian Cycle Disruption by Mixtures of Aromatase Inhibitors.
Bois FY, Golbamaki-Bakhtyari N, Kovarich S, Tebby C, Gabb HA, Lemazurier E.
Environ Health Perspect. 2017 Jul 19;125(7):077012. doi: 10.1289/EHP742.

185. Prenatal Exposure to Nonpersistent Endocrine Disruptors and Behavior in Boys at 3 and 5 Years
Claire Philippat, Dorothy Nakiwala, Antonia M. Calafat, Jérémie Botton, Maria De Agostini, Barbara Heude, Rémy Slama, and the EDEN Mother–Child Study Group
Environ Health Perspect; doi:10.1289/EHP1314

186. Estimating the health benefits of environmental regulations - Changes needed for complete benefits assessment
Al McGartland, Richard Revesz, Daniel A. Axelrad, Chris Dockins, Patrice Sutton, Tracey J. Woodruff
Science Magazine, doi: 10.1126/science.aam8204

187. Cumulative effects of prenatal-exposure to exogenous chemicals and psychosocial stress on fetal growth: Systematic-review of the human and animal evidence
Vesterinen HM, Morello-Frosch R, Sen S, Zeise L, Woodruff TJ.
PLoS One. 2017 Jul 12;12(7):e0176331. doi: 10.1371/journal.pone.0176331.

188. Developmental PBDE Exposure and IQ/ADHD in Childhood: A Systematic Review and Meta-analysis.
Lam J, Lanphear BP, Bellinger D, Axelrad DA, McPartland J, Sutton P, Davidson L, Daniels N, Sen S, Woodruff TJ.
Environ Health Perspect. 2017 Aug 3;125(8):086001. doi: 10.1289/EHP1632.

In vitro studier ved DTU Fødevareinstituttet

Søgt i Pubmed med følgende kriterier:

" Endocrine disrupt* AND in vitro*" samt "Endocrine disrupt* AND expose* AND in vitro*",

"Paraben* AND in vitro*,"perfluor* OR polyfluor* AND in vitro*" og "Phthalat* AND in vitro*".

Publiceret i perioden fra 2017/06/30 til 2017/12/31.

Efter at have fjernet genganger fra forrige litteraturopdateringslister, samt artikler der ikke hørte til under kategorien "*in vitro*" gav litteratursøgningen, med de angivne søgekriterier, tilsammen en liste med i alt 28 artikler.

To artikler er blevet udvalgt, da de beskriver henholdsvis nye metoder og resultater, der bidrager til yderligere viden vedrørende testning, samt effekter af hormonforstyrrende stoffer. Den første artikel omhandler udvikling af en metode, der kan bruges til *high-throughput screening* for hormonforstyrrende effekter af miljø-, fødevareprøver, samt fremmedstoffer basered på en human celle-model. Denne kan give information om hormonforstyrrende stoffers mere komplekse cellulære effekter på protein niveau. Den anden artikel beskriver et studie, hvor man har haft til formål at undersøge nogle af de mulige mekanismer bag de *in vitro* anti-androgene effekter af BPA og visse BPA analoger som tidligere studier har rapporteret.

Udvalgte publikationer

A Chip for Estrogen Receptor Action: Detection of Biomarkers Released by MCF-7 Cells through Estrogenic and Anti-Estrogenic Effects

Gier K, Preininger C, Sauer U.
Sensors (Basel). 2017 Aug 1;17(8). pii: E1760. doi: 10.3390/s17081760.

Abstract

The fluorescence-based multi-analyte chip platform for the analysis of estrogenic and anti-estrogenic substances is a new in vitro tool for the high throughput screening of environmental samples. In contrast to existing tools, the chip investigates the complex action of xenoestrogens in a human cell model by characterizing protein expression. It allows for the quantification of 10 proteins secreted by MCF-7 cells, representing various biological and pathological endpoints of endocrine action and distinguishing between estrogen- and anti-estrogen-dependent secretion of proteins. Distinct protein secretion patterns of the cancer cell line after exposure to known estrogen receptor agonists ß-estradiol, bisphenol A, genistein, and nonylphenol as well as antagonists fulvestrant and tamoxifen demonstrate the potential of the chip. Stimulation of cells with Interleukin-1ß shifts concentrations of low abundant biomarkers towards the working range of the chip. In the non-stimulated cell culture, Matrix Metalloproteinase 9 (MMP-9) and Vascular Endothelial Growth Factor (VEGF) show differences upon treatment with antagonists and agonists of the estrogen receptor. In stimulated MCF-7 cells challenged with receptor agonists secretion of Monocyte Chemoattractant Protein (MCP-1), Interleukin-6 (IL-6), Rantes, and Interleukin-8 (IL-8) significantly decreases. In parallel, the proliferating effect of endocrine-disrupting substances in MCF-7 cells is assessed in a proliferation assay based on resazurin. Using ethanol as a solvent for test substances increases the background of proliferation and secretion experiments, while using dimethyl sulfoxide (DMSO) does not show any adverse effects. The role of the selected biomarkers in different physiological processes such as cell development, reproduction, cancer, and metabolic syndrome makes the chip an excellent tool for either indicating endocrine-disrupting effects in food and environmental samples, or for screening the effect of xenoestrogens on a cellular and molecular level.

Binding of bisphenol A, bisphenol AF, and bisphenol S on the androgen receptor: Coregulator recruitment and stimulation of potential interaction sites

Perera L, Li Y, Coons LA, Houtman R, van Beuningen R, Goodwin B, Auerbach SS, Teng CT.
Toxicol In Vitro. 2017 Oct;44:287-302. doi: 10.1016/j.tiv.2017.07.020. Epub 2017 Jul 24.

Abstract

Bisphenol A (BPA), bisphenol AF (BPAF), and bisphenol S (BPS) are well known endocrine disruptors. Previous in vitro studies showed that these compounds antagonize androgen receptor (AR) transcriptional activity; however, the mechanisms of action are unclear. In the present study, we investigated interactions of coregulator peptides with BPA, BPAF, or BPS at the AR complexes using Micro Array for Real-time Coregulator Nuclear Receptor Interaction (MARCoNI) assays and assessed the binding of these compounds on AR by molecular dynamics (MD) simulations. The set of coregulator peptides that are recruited by BPA-bound AR, either positively/or negatively, are different from those recruited by the agonist R1881-bound AR. Therefore, the data indicates that BPA shows no similarities to R1881 and suggests that it may recruit other coregulators to the AR complex. BPAF-bound AR recruits about 70-80% of the same coregulator peptides as BPA-bound AR. Meanwhile, BPS-bound AR interacts with only few peptides compared to BPA or BPAF-bound AR. MD results show that multiple binding siteswith varying binding affinities are available on AR for BPA, BPAF, and BPS, indicating the availability of modified binding surfaces on AR for coregulator interactions. These findings help explain some of the distinct AR-related toxicities observed with bisphenol chemicals and raise concern for the use of substitutes for BPA in commercial products.

Bruttoliste

1. In Vitro Evaluation of Mitochondrial Function and Estrogen Signaling in Cell Lines Exposed to the Antiseptic Cetylpyridinium Chloride.
Datta S, He G, Tomilov A, Sahdeo S, Denison MS, Cortopassi G.
Environ Health Perspect. 2017 Aug 22;125(8):087015. doi: 10.1289/EHP1404.

2. Evaluating the potential genotoxicity of phthalates esters (PAEs) in perfumes using in vitro assays.
Al-Saleh I, Al-Rajudi T, Al-Qudaihi G, Manogaran P.
Environ Sci Pollut Res Int. 2017 Sep 5. doi: 10.1007/s11356-017-9978-1. [Epub ahead of print]

3.Characterizing cytotoxic and estrogenic activity of Arctic char tissue extracts in primary Arctic char hepatocytes.
Petersen K, Hultman MT, Bytingsvik J, Harju M, Evenset A, Tollefsen KE.
J Toxicol Environ Health A. 2017 Sep 1:1-14. doi: 10.1080/15287394.2017.1357277. [Epub ahead of print]

4. In vitro observations and in silico predictions of xenoestrogen mixture effects in T47D-based receptor transactivation and proliferation assays.
Schlotz N, Kim GJ, Jäger S, Günther S, Lamy E.
Toxicol In Vitro. 2017 Aug 27. pii: S0887-2333(17)30247-3. doi: 10.1016/j.tiv.2017.08.017. [Epub ahead of print]

5. Brominated and organophosphate flame retardants target different neurodevelopmental stages, characterized with embryonic neural stem cells and neuronotypic PC12 cells.
Slotkin TA, Skavicus S, Stapleton HM, Seidler FJ.
Toxicology. 2017 Aug 26;390:32-42. doi: 10.1016/j.tox.2017.08.009. [Epub ahead of print]

6. Bisphenol A affects cell viability involved in autophagy and apoptosis in goat testis sertoli cell.
Zhang Y, Han L, Yang H, Pang J, Li P, Zhang G, Li F, Wang F.
Environ Toxicol Pharmacol. 2017 Jul 29;55:137-147. doi: 10.1016/j.etap.2017.07.014. [Epub ahead of print]

7. Dibutyl Phthalate Rather Than Monobutyl Phthalate Facilitates Contact Hypersensitivity to Fluorescein Isothiocyanate in a Mouse Model.
Kurohane K, Sekiguchi K, Ogawa E, Tsutsumi M, Imai Y.
Biol Pharm Bull. 2017 Aug 26. doi: 10.1248/bpb.b17-00557. [Epub ahead of print]

8. Inhibitory effects of 3,3'-diindolylmethane on epithelial-mesenchymal transition induced by endocrine disrupting chemicals in cellular and xenograft mouse models of breast cancer.
Lee GA, Hwang KA, Choi KC.
Food Chem Toxicol. 2017 Aug 24. pii: S0278-6915(17)30488-X. doi: 10.1016/j.fct.2017.08.037. [Epub ahead of print]

9. Zearalenone and alpha-zearalenol inhibit the synthesis and secretion of pig follicle stimulating hormone via the non-classical estrogen membrane receptor GPR30.
He J, Wei C, Li Y, Liu Y, Wang Y, Pan J, Liu J, Wu Y, Cui S.
Mol Cell Endocrinol. 2017 Aug 19. pii: S0303-7207(17)30432-X. doi: 10.1016/j.mce.2017.08.010. [Epub ahead of print]

10. Bisphenol A Does Not Mimic Estrogen in the Promotion of the In Vitro Response of Murine Dendritic Cells to Toll-Like Receptor Ligands.
Chakhtoura M, Sriram U, Heayn M, Wonsidler J, Doyle C, Dinnall JA, Gallucci S, Roberts RA.
Mediators Inflamm. 2017;2017:2034348. doi: 10.1155/2017/2034348. Epub 2017 Jul 25.

11. A Chip for Estrogen Receptor Action: Detection of Biomarkers Released by MCF-7 Cells through Estrogenic and Anti-Estrogenic Effects.
Gier K, Preininger C, Sauer U.
Sensors (Basel). 2017 Aug 1;17(8). pii: E1760. doi: 10.3390/s17081760.

12. Binding of bisphenol A, bisphenol AF, and bisphenol S on the androgen receptor: Coregulator recruitment and stimulation of potential interaction sites.
Perera L, Li Y, Coons LA, Houtman R, van Beuningen R, Goodwin B, Auerbach SS, Teng CT.
Toxicol In Vitro. 2017 Oct;44:287-302. doi: 10.1016/j.tiv.2017.07.020. Epub 2017 Jul 24.

13. Melamine, beyond the kidney: A ubiquitous endocrine disruptor and neurotoxicant?
Bolden AL, Rochester JR, Kwiatkowski CF.

Toxicol Lett. 2017 Jul 24;280:181-189. doi: 10.1016/j.toxlet.2017.07.893. [Epub ahead of print] Review.

14. The use of a unique co-culture model of fetoplacental steroidogenesis as a screening tool for endocrine disruptors: The effects of neonicotinoids on aromatase activity and hormone production.
Caron-Beaudoin E, Viau R, Hudon-Thibeault AA, Vaillancourt C, Sanderson JT.
Toxicol Appl Pharmacol. 2017 Oct 1;332:15-24. doi: 10.1016/j.taap.2017.07.018. Epub 2017 Jul 24.

15. Bisphenol A affects trophoblast invasion by inhibiting CXCL8 expression in decidual stromal cells.
Li X, Wang Y, Wei P, Shi D, Wen S, Wu F, Liu L, Ye N, Zhou H.
Mol Cell Endocrinol. 2017 Jul 20. pii: S0303-7207(17)30390-8. doi: 10.1016/j.mce.2017.07.016. [Epub ahead of print]

16. Bisphenol A impairs decidualization of human uterine stromal fibroblasts.
Olson MR, Su R, Flaws JA, Fazleabas AT.
Reprod Toxicol. 2017 Jul 17. pii: S0890-6238(17)30509-9. doi: 10.1016/j.reprotox.2017.07.008. [Epub ahead of print]

17. Analysis of sugarcane herbicides in marine turtle nesting areas and assessment of risk using in vitro toxicity assays.
Allan HL, van de Merwe JP, Finlayson KA, O'Brien JW, Mueller JF, Leusch FDL.
Chemosphere. 2017 Oct;185:656-664. doi: 10.1016/j.chemosphere.2017.07.029. Epub 2017 Jul 9.

18. Evaluation of estrogen receptor alpha activation by glyphosate-based herbicide constituents.
Mesnage R, Phedonos A, Biserni M, Arno M, Balu S, Corton JC, Ugarte R, Antoniou MN.
Food Chem Toxicol. 2017 Oct;108(Pt A):30-42. doi: 10.1016/j.fct.2017.07.025. Epub 2017 Jul 12.

19. Investigation of the presence and endocrine activities of pesticides found in wastewater effluent using yeast-based bioassays.
Westlund P, Yargeau V.
Sci Total Environ. 2017 Dec 31;607-608:744-751. doi: 10.1016/j.scitotenv.2017.07.032. Epub 2017 Jul 27.

20. Multiple receptors shape the estrogen response pathway and are critical considerations for the future of in vitro-based risk assessment efforts.
Miller MM, McMullen PD, Andersen ME, Clewell RA.
Crit Rev Toxicol. 2017 Aug;47(7):564-580. doi: 10.1080/10408444.2017.1289150. Epub 2017 Jul 4.

21. Resveratrol has anti-thyroid effects both in vitro and in vivo.
Giuliani C, Iezzi M, Ciolli L, Hysi A, Bucci I, Di Santo S, Rossi C, Zucchelli M, Napolitano G.
Food Chem Toxicol. 2017 Sep;107(Pt A):237-247. doi: 10.1016/j.fct.2017.06.044. Epub 2017 Jun 28.

22. Effects of N-Nitrosodiethylamine, a Potent Carcinogen, on Sexual Development, Gametogenesis, and Oocyte Maturation.
Nair U R, Victor AC, Paul V, Paul-Prasanth B.
Sex Dev. 2017;11(3):161-167. doi: 10.1159/000477106. Epub 2017 Jun 30.

23. The design of an environmentally relevant mixture of persistent organic pollutants for use in in vivo and in vitro studies.
Berntsen HF, Berg V, Thomsen C, Ropstad E, Zimmer KE.
J Toxicol Environ Health A. 2017 Aug 30:1-15. doi: 10.1080/15287394.2017.1354439. [Epub ahead of print]

24. In vitro toxicity of perfluorooctane sulfonate on rat liver hepatocytes: probability of distructive binding to CYP 2E1 and involvement of cellular proteolysis.
Khansari MR, Yousefsani BS, Kobarfard F, Faizi M, Pourahmad J.
Environ Sci Pollut Res Int. 2017 Aug 25. doi: 10.1007/s11356-017-9908-2. [Epub ahead of print]

25. Synthesis and electronic properties of ester substituted 1,4-dicyanodibenzodioxins and evaluation of anti-proliferative activity of all isomeric 1,2-, 2,3- and 1,4-dicyanodibenzodioxins against HeLa cell line.
Banerjee S, Chattopadhyay A, Fernandes JRD, Banerjee A, Phadte AA, Savardekar AV, Singh KS.
Bioorg Med Chem Lett. 2017 Sep 15;27(18):4280-4284. doi: 10.1016/j.bmcl.2017.08.042. Epub 2017 Aug 19.

26. Suppression of Myogenic Differentiation of Mammalian Cells Caused by Fluidity of a Liquid-Liquid Interface.
Minami K, Mori T, Nakanishi W, Shigi N, Nakanishi J, Hill JP, Komiyama M, Ariga K.
ACS Appl Mater Interfaces. 2017 Sep 13;9(36):30553-30560. doi: 10.1021/acsami.7b11445. Epub 2017 Sep 1.

27. Perfluoroalkyl substances in human bone: concentrations in bones and effects on bone cell differentiation.
Koskela A, Koponen J, Lehenkari P, Viluksela M, Korkalainen M, Tuukkanen J.
Sci Rep. 2017 Jul 28;7(1):6841. doi: 10.1038/s41598-017-07359-6.

28. Expansion of bone marrow-derived human mesenchymal stem/stromal cells (hMSCs) using a two-phase liquid/liquid system.
Hanga MP, Murasiewicz H, Pacek AW, Nienow AW, Coopman K, Hewitt CJ.
J Chem Technol Biotechnol. 2017 Jul;92(7):1577-1589. doi: 10.1002/jctb.5279. Epub 2017 Apr 24.

29. Oxygen self-enriched nanoparticles functionalized with erythrocyte membranes for long circulation and enhanced phototherapy.
Ren H, Liu J, Li Y, Wang H, Ge S, Yuan A, Hu Y, Wu J.
Acta Biomater. 2017 Sep 1;59:269-282. doi: 10.1016/j.actbio.2017.06.035. Epub 2017 Jun 27.

30. Controlled release of basic fibroblast growth factor for angiogenesis using acoustically-responsive scaffolds.
Moncion A, Lin M, O'Neill EG, Franceschi RT, Kripfgans OD, Putnam AJ, Fabiilli ML.
Biomaterials. 2017 Sep;140:26-36. doi: 10.1016/j.biomaterials.2017.06.012. Epub 2017 Jun 9.

31. Fluorinated methacrylamide chitosan sequesters reactive oxygen species to relieve oxidative stress while delivering oxygen.
Patil PS, Leipzig ND.
J Biomed Mater Res A. 2017 Aug;105(8):2368-2374. doi: 10.1002/jbm.a.36079. Epub 2017 Jun 19.

32. The development of mechanically formed stable nanobubbles intended for sonoporation-mediated gene transfection.
Abdalkader R, Kawakami S, Unga J, Higuchi Y, Suzuki R, Maruyama K, Yamashita F, Hashida M.
Drug Deliv. 2017 Nov;24(1):320-327. doi: 10.1080/10717544.2016.1250139.

33. Cytotoxic effects of commonly used nanomaterials and microplastics on cerebral and epithelial human cells.
Schirinzi GF, Pérez-Pomeda I, Sanchís J, Rossini C, Farré M, Barceló D.
Environ Res. 2017 Sep 9;159:579-587. doi: 10.1016/j.envres.2017.08.043. [Epub ahead of print]

34. Di (2-ethylhexyl) phthalate exposure impairs meiotic progression and DNA damage repair in fetal mouse oocytes in vitro.
Liu JC, Lai FN, Li L, Sun XF, Cheng SF, Ge W, Wang YF, Li L, Zhang XF, De Felici M, Dyce PW, Shen W.
Cell Death Dis. 2017 Aug 3;8(8):e2966. doi: 10.1038/cddis.2017.350.

35. In vitro to in vivo extrapolation of effective dosimetry in developmental toxicity testing: Application of a generic PBK modelling approach.
Fragki S, Piersma AH, Rorije E, Zeilmaker MJ.
Toxicol Appl Pharmacol. 2017 Oct 1;332:109-120. doi: 10.1016/j.taap.2017.07.021. Epub 2017 Jul 29.

36. Inhibitory effects of fifteen phthalate esters in human cDNA-expressed UDP-glucuronosyltransferase supersomes.
Cao YF, Du Z, Zhu ZT, Sun HZ, Fu ZW, Yang K, Liu YZ, Hu CM, Dong PP, Gonzalez FJ, Fang ZZ.
Chemosphere. 2017 Oct;185:983-990. doi: 10.1016/j.chemosphere.2017.07.105. Epub 2017 Jul 19.

37. Analysis of toxicity effects of Di-(2-ethylhexyl) phthalate exposure on human bronchial epithelial 16HBE cells.
Ma Y, Guo Y, Wu S, Lv Z, Zhang Q, Xie X, Ke Y.
Cytotechnology. 2017 Jul 8. doi: 10.1007/s10616-017-0111-6. [Epub ahead of print]

38. In vitro assessment of phthalate acid esters-trypsin complex formation.
Chi Z, Zhao J, Li W, Araghi A, Tan S.

In vivo studier ved DTU Fødevareinstituttet

Søgning er udført på PubMed og dækker perioden Juli - ultimo September 2017

Følgende søgeprofil er benyttet i PubMed: ((endocrine disrupt*) AND (rat OR mice OR mammal*)) OR ((endocrine disrupt*) AND (in vivo*))((endocrine disrupt*) AND (Paraben*)) OR ((endocrine disrupt*) AND (Phthalat*)) OR ((PFAS* OR Perfluor*) AND (endocrine disrupt*) OR ((Endocrine disrupt* AND (antiandrogen)) OR ((endocrine disrupt*) AND (behaviour OR behavior*)) OR ((Endocrine disrupt*) AND (Bisphenol A or BPA) OR ((Endocrine disrupt*) AND risk assessment

Efter at have fjernet gengangere fra dem vi havde med på den forrige litteraturopdateringsliste samt *in vitro*, human eller SDU relevante artikler, gav litteratursøgningen en liste med i alt 30 artikler (Bruttolisten).

Fire artikler er blevet udvalgt, da vi mener, de bidrager til ny viden om hormonforstyrrende stoffer. De to første artikler har særligt fokus på kombinationseffekter af hormonforstyrrende stoffer (bl.a. pesticider) i et nyt assay "the Fetal Gonad Assay"(FEGA) (Gaudriault et al. 2017) samt en ny artikel fra Science der beskriver ny forskning mht. kønsdifferentieringen hos pattedyr (Zhao et al. 2017). Derudover er to artikler inkluderet omhandlende implementering af 3R i udviklings- og reproduktions-toksicitetstest (DART) (Beekhuijzen, 2017) og en artikel om et alternativ til phthalater, DINCH (Campioli et al. 2017).

Udvalgte publikationer

Endocrine Disruption in Human Fetal Testis Explants by Individual and Combined Exposures to Selected Pharmaceuticals, Pesticides, and Environmental Pollutants

Gaudriault P, Mazaud-Guittot S, Lavoué V, Coiffec I, Lesné L, Dejucq-Rainsford N, Scholze M, Kortenkamp A, Jégou B. Environ Health Perspect. 2017 Aug 4;125(8):087004. doi: 10.1289/EHP1014..

Abstract

BACKGROUND: Numerous chemicals are capable of disrupting androgen production, but the possibility that they might act together to produce effects greater than those of the most effective component in the mixture has not been studied directly in human tissues. Suppression of androgen synthesis in fetal life has been associated with testis maldescent, malformations of the genitalia at birth, and poor semen quality later in life.

OBJECTIVES: Our aim was to investigate whether chemicals can act together to disrupt androgen production in human fetal testis explants and to evaluate the importance of mixture effects when characterizing the hazard of individual chemicals.

METHODS: We used an organotypic culture system of human fetal testes explants called FEtal Gonad Assay (FEGA) with tissue obtained at 10 and 12 gestational wk (GW 10-12), to screen 27 chemicals individually for their possible anti-androgenic effect. Based on the results of the screen, we selected 11 compounds and tested them as mixtures.

RESULTS: We evaluated mixtures composed of four and eight antiandrogens that contained the pharmaceuticals ketoconazole and theophylline and several previously untested chemicals, such as the pesticides imazalil and propiconazole. Mixtures of antiandrogens can suppress testosterone synthesis in human fetal testicular explants to an extent greater than that seen with individual chemicals. This revealed itself as a shift towards lower doses in the dose-response curves of individual antiandrogens that became more pronounced as the number of components increased from four to eight.

CONCLUSIONS: Our results with the FEGA provide the foundations of a predictive human mixture risk assessment approach for anti-androgenic exposures in fetal life.

Elimination of the male reproductive tract in the female embryo is promoted by COUP-TFII in mice.

Zhao F, Franco HL, Rodriguez KF, Brown PR, Tsai MJ, Tsai SY, Yao HH.
Science. 2017 Aug 18;357(6352):717-720. doi: 10.1126/science.aai9136.

Abstract

The sexual differentiation paradigm contends that the female pattern of the reproductive system is established by default because the male reproductive tracts (Wolffian ducts) in the female degenerate owing to a lack of androgen. Here, we discovered that female mouse embryos lacking Coup-tfII (chicken ovalbumin upstream promoter transcription factor II) in the Wolffian duct mesenchyme became intersex-possessing both female and male reproductive tracts. Retention of Wolffian ducts was not caused by ectopic androgen production or action. Instead, enhanced phosphorylated extracellular signal-regulated kinase signaling in Wolffian duct epithelium was responsible for the retention of male structures in an androgen-independent manner. We thus suggest that elimination of Wolffian ducts in female embryos is

actively promoted by COUP-TFII, which suppresses a mesenchyme-epithelium cross-talk responsible for Wolffian duct maintenance.

The era of 3Rs implementation in developmental and reproductive toxicity (DART) testing: Current overview and future perspectives.

Beekhuijzen M.

Reprod Toxicol. 2017 Sep;72:86-96. doi: 10.1016/j.reprotox.2017.05.006. Epub 2017 May 25. Review.

Abstract

Since adoption of the first globally implemented guidelines for developmental and reproductive toxicity (DART) testing for pharmaceuticals, industrial chemicals and agrochemicals, many years passed without major updates. However in recent years, significant changes in these guidelines have been made or are being implemented. These changes have been guided by the ethical drive to reduce, refine and replace (3R) animal testing, as well as the addition of endocrine disruptor relevant endpoints. Recent applied improvements have focused on reduction and refinement. Ongoing scientific and technical innovations will provide the means for replacement of animal testing in the future and will improve predictivity in humans. The aim of this review is to provide an overview of ongoing global DART endeavors in respect to the 3Rs, with an outlook towards future advances in DART testing aspiring to reduce animal testing to a minimum and the supreme ambition towards animal-free hazard and risk assessment.

Effect of prenatal DINCH plasticizer exposure on rat offspring testicular function and metabolism.

Campioli E, Lee S, Lau M, Marques L, Papadopoulos V.

Sci Rep. 2017 Sep 11;7(1):11072. doi: 10.1038/s41598-017-11325-7.

Abstract

In 2002, the plasticizer 1,2-cyclohexane dicarboxylic acid diisononyl ester (DINCH) was introduced in the European market as a substitute for endocrine-disrupting phthalates. We found that in utero exposure of rats to DINCH from gestational day 14 until parturition affected reproductive organ physiology and reduced circulating testosterone levels at post-natal day 60, indicating a long-term effect on Leydig cells of the testis. Metabolically, animals exhibited randomly increased serum glucose concentrations not associated with impaired glucose utilization. Analysis of liver markers in the serum showed a hepatic effect; e.g. reduced bilirubin levels and albumin/globulin ratio. At post-natal day 200, random appearance of testicular atrophy was noted in exposed offspring, and limited changes in other reproductive parameters were observed. In conclusion, DINCH exposure appears to directly affect Leydig cell function, likely causing premature aging of the testes and impaired liver metabolic capacity. These effects might be attenuated with physiologic aging.

Bruttoliste

1. Maternal diethylhexyl phthalate exposure affects adiposity and insulin tolerance in offspring in a PCNA-dependent manner.
Hunt BG, Wang YL, Chen MS, Wang SC, Waltz SE.
Environ Res. 2017 Sep 12;159:588-594. doi: 10.1016/j.envres.2017.09.004. [Epub ahead of print]

2. A Human Mixture Risk Assessment for Neurodevelopmental Toxicity Associated with Polybrominated Diphenyl Ethers Used as Flame Retardants.
Martin OV, Evans RM, Faust M, Kortenkamp A.
Environ Health Perspect. 2017 Aug 23;125(8):087016. doi: 10.1289/EHP826.

3. From the Cover: Metabolomics Reveals a Role of Betaine in Prenatal DBP Exposure-Induced Epigenetic Transgenerational Failure of Spermatogenesis in Rats.
Yuan B, Wu W, Chen M, Gu H, Tang Q, Guo D, Chen T, Chen Y, Lu C, Song L, Xia Y, Chen D, Rehan VK, Sha J, Wang X.
Toxicol Sci. 2017 Aug 1;158(2):356-366. doi: 10.1093/toxsci/kfx092.

4. [Hypospadias : Insights and challenges].
Rübben I, Stein R.
Urologe A. 2017 Sep 11. doi: 10.1007/s00120-017-0498-x. [Epub ahead of print] German.

5. Effect of prenatal DINCH plasticizer exposure on rat offspring testicular function and metabolism.
Campioli E, Lee S, Lau M, Marques L, Papadopoulos V.
Sci Rep. 2017 Sep 11;7(1):11072. doi: 10.1038/s41598-017-11325-7. (Abstract)

6. Effects of diisononyl phthalate on osteopenia in intact mice.
Hwang YH, Son YJ, Paik MJ, Yee ST.
Toxicol Appl Pharmacol. 2017 Sep 8;334:120-128. doi: 10.1016/j.taap.2017.08.016. [Epub ahead of print]

7. Systematic review and meta-analysis of early life exposure to di(2-ethylhexyl) phthalate and obesity related outcomes in rodents.
Wassenaar PNH, Legler J.
Chemosphere. 2017 Aug 31;188:174-181. doi: 10.1016/j.chemosphere.2017.08.165. [Epub ahead of print] Review.

8. Specific effects of prenatal DEHP exposure on neuroendocrine gene expression in the developing hypothalamus of male rats.
Gao N, Hu R, Huang Y, Dao L, Zhang C, Liu Y, Wu L, Wang X, Yin W, Gore AC, Sun Z.
Arch Toxicol. 2017 Sep 4. doi: 10.1007/s00204-017-2049-z. [Epub ahead of print]

9. Dibutyl Phthalate Rather Than Monobutyl Phthalate Facilitates Contact Hypersensitivity to Fluorescein Isothiocyanate in a Mouse Model.
Kurohane K, Sekiguchi K, Ogawa E, Tsutsumi M, Imai Y.
Biol Pharm Bull. 2017 Aug 26. doi: 10.1248/bpb.b17-00557. [Epub ahead of print]

10. Environmental endocrine disruptors: New diabetogens?
Fénichel P, Chevalier N.
C R Biol. 2017 Aug 18. pii: S1631-0691(17)30124-5. doi: 10.1016/j.crvi.2017.07.003. [Epub ahead of print]

11. Sub-chronic exposure to low concentration of dibutyl phthalate affects anthropometric parameters and markers of obesity in rats.
Mjaeed KA, Ur Rehman H, Yousaf MS, Zaneb H, Rabbani I, Tahir SK, Rashid MA.
Environ Sci Pollut Res Int. 2017 Aug 19. doi: 10.1007/s11356-017-9952-y. [Epub ahead of print]

12. Phthalates impact human health: Epidemiological evidences and plausible mechanism of action.
Benjamin S, Masai E, Kamimura N, Takahashi K, Anderson RC, Faisal PA.
J Hazard Mater. 2017 Oct 15;340:360-383. doi: 10.1016/j.jhazmat.2017.06.036. Epub 2017 Jun 19. Review.

13. Female exposure to endocrine disrupting chemicals and fecundity: a review.
Mínguez-Alarcón L, Gaskins AJ.
Curr Opin Obstet Gynecol. 2017 Aug;29(4):202-211. doi: 10.1097/GCO.0000000000000373.

14. Diethylhexyl phthalate magnifies deposition of ¹⁴ C-bisphenol A in reproductive tissues of mice.
Borman ED, Vecchi N, Pollock T, deCatanzaro D.
J Appl Toxicol. 2017 Oct;37(10):1225-1231. doi: 10.1002/jat.3484. Epub 2017 May 29.

15. The endocrine disrupting alkylphenols and 4,4'-DDT interfere with estrogen conversion and clearance by mouse liver cytosol.
El-Hefnawy T, Hernandez C, Stabile LP.
Reprod Biol. 2017 Sep;17(3):185-192. doi: 10.1016/j.repbio.2017.04.003. Epub 2017 May 19.

16. Elimination of the male reproductive tract in the female embryo is promoted by COUP-TFII in mice.
Zhao F, Franco HL, Rodriguez KF, Brown PR, Tsai MJ, Tsai SY, Yao HH.
Science. 2017 Aug 18;357(6352):717-720. doi: 10.1126/science.aai9136. (Valgt)

17. Low-dose pollutant mixture triggers metabolic disturbances in female mice leading to common and specific features as compared to a high-fat diet.
Labaronne E, Pinteur C, Vega N, Pesenti S, Julien B, Meugnier-Fouilloux E, Vidal H, Naville D, Le Magueresse-Battistoni B.
J Nutr Biochem. 2017 Jul;45:83-93. doi: 10.1016/j.jnutbio.2017.04.001. Epub 2017 Apr 8.

18. Environmental estrogen-like endocrine disrupting chemicals and breast cancer.
Morgan M, Deoraj A, Felty Q, Roy D.
Mol Cell Endocrinol. 2017 Dec 5;457:89-102. doi: 10.1016/j.mce.2016.10.003. Epub 2016 Oct 4.

19. Molecular mechanisms involved in the non-monotonic effect of bisphenol-a on ca2+ entry in mouse pancreatic β-cells.
Villar-Pazos S, Martinez-Pinna J, Castellano-Muñoz M, Alonso-Magdalena P, Marroqui L, Quesada I, Gustafsson JA, Nadal A.
Sci Rep. 2017 Sep 18;7(1):11770. doi: 10.1038/s41598-017-11995-3.

20. High-Throughput Analysis of Ovarian Cycle Disruption by Mixtures of Aromatase Inhibitors.
Bois FY, Golbamaki-Bakhtyari N, Kovarich S, Tebby C, Gabb HA, Lemazurier E.
Environ Health Perspect. 2017 Jul 19;125(7):077012. doi: 10.1289/EHP742.

21. Endocrine Disruption in Human Fetal Testis Explants by Individual and Combined Exposures to Selected Pharmaceuticals, Pesticides, and Environmental Pollutants.
Gaudriault P, Mazaud-Guittot S, Lavoué V, Coiffec I, Lesné L, Dejucq-Rainsford N, Scholze M, Kortenkamp A, Jégou B.
Environ Health Perspect. 2017 Aug 4;125(8):087004. doi: 10.1289/EHP1014. (Valgt)

22. Chronic exposure to the fungicide propiconazole: Behavioral and reproductive evaluation of F1 and F2 generations of male rats.
Vieira ML, Costa NO, Pereira MRF, de Fátima Paccola Mesquita S, Moreira EG, Gerardin DCC.
Toxicology. 2017 Aug 15;389:85-93. doi: 10.1016/j.tox.2017.07.012. Epub 2017 Jul 22.

23. Chronic exposure to the fungicide propiconazole: Behavioral and reproductive evaluation of F1 and F2 generations of male rats.
Vieira ML, Costa NO, Pereira MRF, de Fátima Paccola Mesquita S, Moreira EG, Gerardin DCC.
Toxicology. 2017 Aug 15;389:85-93. doi: 10.1016/j.tox.2017.07.012. Epub 2017 Jul 22.
24. Perinatal exposure of pregnant rats to cypermethrin delays testicular descent, impairs fertility in F1 male progeny leading to developmental defects in F2 generation.
Singh D, Bhagat S, Raijiwala P, Dighe V, Vanage G.
Chemosphere. 2017 Oct;185:376-385. doi: 10.1016/j.chemosphere.2017.06.138. Epub 2017 Jul 4.

25. 'Omics' and endocrine-disrupting chemicals - new paths forward.
Messerlian C, Martinez RM, Hauser R, Baccarelli AA.
Nat Rev Endocrinol. 2017 Jul 14. doi: 10.1038/nrendo.2017.81. [Epub ahead of print] Review.

26. Multiple receptors shape the estrogen response pathway and are critical considerations for the future of in vitro-based risk assessment efforts.
Miller MM, McMullen PD, Andersen ME, Clewell RA.
Crit Rev Toxicol. 2017 Aug;47(7):564-580. doi: 10.1080/10408444.2017.1289150. Epub 2017 Jul 4.

27. Agonistic and antagonistic effects of phthalates and their urinary metabolites on the steroid hormone receptors ERα, ERβ, and AR.
Engel A, Buhrke T, Imber F, Jessel S, Seidel A, Völkel W, Lampen A.
Toxicol Lett. 2017 Aug 5;277:54-63. doi: 10.1016/j.toxlet.2017.05.028. Epub 2017 May 29.

28. The impact of Zearalenone on the meiotic progression and primordial follicle assembly during early oogenesis.

Liu KH, Sun XF, Feng YZ, Cheng SF, Li B, Li YP, Shen W, Li L.
Toxicol Appl Pharmacol. 2017 Aug 15;329:9-17. doi: 10.1016/j.taap.2017.05.024. Epub 2017 May 26.

29. The era of 3Rs implementation in developmental and reproductive toxicity (DART) testing: Current overview and future perspectives.
Beekhuijzen M.
Reprod Toxicol. 2017 Sep;72:86-96. doi: 10.1016/j.reprotox.2017.05.006. Epub 2017 May 25. Review. (Abstract)

30. Risk assessment of the endocrine-disrupting effects of nine chiral pesticides.
Song Q, Zhang Y, Yan L, Wang J, Lu C, Zhang Q, Zhao M.
J Hazard Mater. 2017 Sep 15;338:57-65. doi: 10.1016/j.jhazmat.2017.05.015. Epub 2017 May 11.

Wildlife studier ved Biologisk Institut, Syddansk Universitet (SDU)

Søgningen er udført på Web of Science (all databases) og dækker perioden 19/6 - 18/9 2017.

Søgeprofilen kombinerer:	”endocrine disrupt*” and	fish* amphibia* bird* OR avia* invertebrat* mollus* gastropod* insect* crustacea* echinoderm* ursus reptil* OR alligator whal* OR seal* OR dolphin*

Fra bruttolisten (længere nede i dokumentet) er udvalgt tre artikler. Kriterierne for udvælgelsen af publikationer er, at de bidrager til ny viden omkring effekter af og virkningsmekanismer for hormonforstyrrende stoffer i ’wildlife’ og/eller, at de repræsenterer vigtig viden, som vurderes at have særlig interesse for Miljøstyrelsen bl.a. i forbindelse med styrelsens fokus på udvikling af testmetoder. Desuden kommenteres artikler, der omhandler ’nye’ stoffer, der har vist sig hormonforstyrrende; specielt hvis disse har relevans for danske forhold.

Udvalgte publikationer

A multi-tiered, in vivo, quantitative assay suite for environmental disruptors of thyroid hormone signaling

Mengeling BJ, Wei Y, Dobrawa LN, Streekstra M, Louisse J, Singh V, Singh L, Lein PJ, Wulff H, Murk AJ, Furlow JD.

Aquatic Toxicology. 190: 1-10. 2017.

Abstract

The essential role of thyroid hormone (TH) signaling in mammalian development warrants the examination of man-made chemicals for its disruption. Among vertebrate species, the molecular components of TH signaling are highly conserved, including the thyroid hormone receptors (TRs), their heterodimer binding partners the retinoid-X receptors (RXRs), and their DNA recognition sequences (TREs). This molecular conservation allows examination of potential TH disruption in the tractable, in vivo model system of amphibian metamorphosis. Metamorphosis requires TH signaling for both instigation and progression, and it provides dramatic and well characterized phenotypes involving different cell fates. Here we describe a quantitative, precocious-metamorphosis assay suite we developed using one-week post-fertilization (PF) Xenopus laevis tadpoles in order to assess disruption of TH signaling. Tadpoles at this developmental stage (Nieuwkoop-Faber (NF)-48) are competent to respond to TH hormone, although not yet producing TH, along many metamorphic pathways, and they are uniform in size. This allowed us to quantify changes in morphology associated with natural metamorphosis (e.g. gill and tail resorption, brain expansion, and craniofacial remodeling) after five days of treatment. Using the same tadpoles from morphological measurements, we quantified a 20-fold increase in TH-induced cellular proliferation in the rostral head region by whole-mount immunocytochemistry. At the molecular level, we used F3-generation tadpoles from a transgenic X. laevis line, which expresses luciferase under the control of a native TRE, to assess the ability of compounds to disrupt TR function. The luciferase reporter showed over 10-fold activation by physiologic concentrations of TH. We used the synthetic TR antagonist NH-3 to demonstrate the feasibility of our assay suite to measure inhibition of TH activity at the level of the receptor. Finally, we assessed the capabilities of suspected TH-disrupting chemicals tetrabrominated diphenyl ether 47 (BDE-47) and tetrabromobisphenol A (TBBPA). We found that BDE-47 displays general toxicity rather than TH disruption, as it did not increase brain width nor affect the TRE-luciferase reporter. However, TBBPA, a suspected TR antagonist, although not effective in antagonizing cell proliferation, significantly inhibited the TRE-luciferase reporter, suggesting that it bears closer scrutiny as a TH disruptor. Overall the assay suite has important advantages over the classical tadpole metamorphosis assays with respect to the uniformity of animal size, small test volume, reproducibility, and short test period. The assays are performed before endogenous TH production and free feeding start, which further reduces complexity and variability.

Different effects of bisphenol a and its halogenated derivatives on the reproduction and development of Oryzias melastigma under environmentally relevant doses

Huang QS, Chen YJ, Lin LF, Liu YY, Chi YL, Lin Y, Ye GZ, Zhu HM, Dong SJ.

Science of the Total Environment. 595: 752-758. 2017.

Abstract

Bisphenol A (BPA) and its halogenated compounds (H-BPAs) are widely detected in the environmental media and organisms. However, their toxicological effects, especially chronic exposure at low doses, have not been fully compared. In this study, the effects of BPA and H-BPAs on the reproduction and development of Oryzias melastigma were systematically assessed and compared at various developmental stages. BPA and its derivatives tetrabromobisphenol A (TBBPA) and tetrachlorobisphenol A (TCBPA) elicited the acceleration of embryonic heartbeat. BPA did not show any significant impact on the hatching time and rate of embryos. In contrast, both TBBPA and TCBPA led to the delayed hatching and decreased hatching rate. Accordingly, the expressions of hatching enzyme significantly decreased upon exposure and TCBPA was found to be more toxic than TBBPA. The body weight and gonadsomatic index (GSI) of the treated fish were relatively lower than the control fish upon long term (four months from larvae to adult) exposure to BPA rather than H-BPAs. Slowed oocyte development occurred in the ovary, and the estrogen level decreased after exposure to BPA rather than H-BPAs. In male fish, no significant alteration was observed in the testis for all groups. The concentration of testosterone significantly decreased upon exposure to BPA rather than H-BPAs. The effects of these three chemicals on the estrogen-related gene expressions were different under various developmental stages. Our study indicated the importance of considering both the exposure stages and structure-activity relationship when assessing the eco-toxicological impact of pollutants.

Waterborne exposure to BPS causes thyroid endocrine disruption in zebrafish larvae

Zhang D, Zhou E, Yang Z.

Plos One 12(5): e0176927. 2017.

Abstract

Bisphenol S (BPS) is widely used as a raw material in industry, resulting in its ubiquitous distribution in natural environment, including the aqueous environment. However, the effect of BPS on the thyroid endocrine system is largely unknown. In this study, zebrafish (*Danio rerio*) embryos were exposed to BPS at 1, 3, 10, and 30 μg/L, from 2 h post-fertilization (hpf) to 168hpf. Bioconcentration of BPS and whole-body thyroid hormones (THs), thyroid-stimulating hormone (TSH) concentrations as well as transcriptional profiling of key genes related to the hypothalamic-pituitary-thyroid (HPT) axis were examined. Chemical analysis indicated that BPS was accumulated in zebrafish larvae. Thyroxine (T4) and triiodothyronine (T3) levels were significantly decreased at ≥ 10 and 30 μg/L of BPS, respectively. However, TSH concentration was significantly induced in the 10 and 30 μg/L BPS-treated groups. After exposure to BPS, the mRNA expression of corticotrophin releasing hormone (*crh*) and thyroglobulin (*tg*) genes were up-regulated at ≥10 μg/L of BPS, in a dose-response manner. The transcription of genes involved in thyroid development (*pax8*) and synthesis (sodium/iodide symporter, *slc5a5*) were also significantly increased in the 30 μg/L of BPS treatment group. Moreover, exposure to 10 μg/L or higher concentration of BPS significantly up-regulated genes related to thyroid hormone metabolism (deiodinases, *dio1*, *dio2* and uridinediphosphate glucoronosyltransferases, *ugt1ab*), which might be responsible for the altered THs levels. However, the transcript of transthyretin (*ttr*) was significantly down-regulated at ≥ 3 μg/L of BPS, while the mRNA levels of thyroid hormone receptors (*trα* and *trβ*) and *dio3* remained unchanged. All the results indicated that exposure to BPS altered the whole-body THs and TSH concentrations and changed the expression profiling of key genes related to HPT axis, thus triggering thyroid endocrine disruption.

Bruttoliste

1. Investigation of the presence and endocrine activities of pesticides found in wastewater effluent using yeast-based bioassays.
Westlund P, Yargeau V.
Science of the Total Environment. 607: 744-751. 2017.

2. SSRIs antidepressants in marine mussels from Atlantic coastal areas and human risk assessment.
Silva LJG, Pereira AMPT, Rodrigues H, Meisel LM, Lino CM, Pena A.
Science of the Total Environment. 603: 118-125. 2017.

3. Risk assessment of triclosan released from sewage treatment plants in European rivers using a combination of risk quotient methodology and Monte Carlo simulation.
Thomaidi VS, Matsoukas C, Stasinakis AS.
Science of the Total Environment. 603: 487-494. 2017.

4. European demonstration program on the effect-based and chemical identification and monitoring of organic pollutants in European surface waters.
Tousova Z, Oswald P, Slobodnik J, Blaha L, Muz M, Hu M, Brack W, Krauss M, Di Paolo C, Tarcai Z, Seiler TB, Hollert H, Koprivica S, Ahel M, Schollee JE, Hollender J, Suter MJF, Hidasi AO, Schirmer K, Sonavane M, Ait-Aissa S, Creusot N, Brion F, Froment J, Almeida AC, Thomas K, Tollefsen KE, Tufi S, Ouyang XY, Leonards P, Lamoree M, Torrens VO, Kolkman A, Schriks M, Spirhanzlova P, Tindall A, Schulze T.
Science of the Total Environment. 601: 1849-1868. 2017.

5. Agricultural expansion as risk to endangered wildlife: Pesticide exposure in wild chimpanzees and baboons displaying facial dysplasia.
Krief S, Berny P, Gumisiriza F, Gross R, Demeneix B, Fini JB, Chapman CA, Chapman LJ, Seguya A, Wasswa J.
Science of the Total Environment. 598: 647-656. 2017.

6. Bioaccumulation and biomagnification of emerging bisphenol analogues in aquatic organisms from Taihu Lake, China.
Wang Q, Chen M, Shan GQ, Chen PY, Cui S, Yi SJ, Zhu LY.
Science of the Total Environment. 598: 814-820. 2017.

7. 17 alpha-Ethynylestradiol alters the peritoneal immune response of gilthead seabream.
Gomez-Gonzalez NE, Cabas I, Rodenas MC, Arizcun M, Mulero V, Ayala AG.
Developmental and Comparative Immunology. 76: 143-149. 2017.

8. Effects of chronic exposure to cefadroxil and cefradine on Daphnia magna and Oryzias latipes.
Kim B, Ji K, Kho Y, Kim PG, Park K, Kim K, Kim Y, Kim KT, Choi K.
Chemosphere. 185: 844-851. 2017.

9. Effects of endocrine disrupting chemicals on estrogen receptor alpha and heat shock protein 60 gene expression in primary cultures of loggerhead sea turtle (Caretta caretta) erythrocytes.
Cocci P, Capriotti M, Mosconi G, Palermo FA.
Environmental Research. 158: 616-624. 2017.

10. Occurrence of personal care products as emerging chemicals of concern in water resources: A review.
Montes-Grajales D, Fennix-Agudelo M, Miranda-Castro W.
Science of the Total Environment. 595: 601-614. 2017.

11. Different effects of bisphenol a and its halogenated derivatives on the reproduction and development of Oryzias melastigma under environmentally relevant doses.
Huang QS, Chen YJ, Lin LF, Liu YY, Chi YL, Lin Y, Ye GZ, Zhu HM, Dong SJ.
Science of the Total Environment. 595: 752-758. 2017.

12. Demographic and genetic consequences of disturbed sex determination.
Wedekind C.
Philosophical Transactions of the Royal Society B-Biological Sciences. 372(1729): 2017.

13. Prenatal transfer of decabromodiphenyl ether (BDE-209) results in disruption of the thyroid system and developmental toxicity in zebrafish offspring.
Han ZH, Li YF, Zhang SH, Song NH, Xu HZ, Dang Y, Liu CS, Giesy JP, Yu HX.

Aquatic Toxicology. 190: 46-52. 2017.

14. NewInsights Into the Role of Estrogens inMale Fertility Based on Findings in Aromatase-Deficient Zebrafish.
Tang HP, Chen Y, Liu Y, Yin YK, Li GF, Guo Y, Liu XC, Lin HR.
Endocrinology. 158(9): 3042-3054. 2017.

15. Endocrine disruption effects in male and intersex roach (Rutilus rutilus, L.) from French rivers: An integrative approach based on subcellular to individual responses.
Geraudie P, Gerbron M, Minier C.
Comparative Biochemistry and Physiology B-Biochemistry & Molecular Biology. 211: 29-36. 2017.

16. The effects of phytosterols on the sexual behavior and reproductive function in the Japanese quail (Coturnix coturnix japonica).
Qasimi MI, Nagaoka K, Watanabe G.
Poultry Science. 96(9): 3436-3444. 2017.

17. Effect of methylparaben in Artemia franciscana.
Comeche A, Martin-Villamil M, Pico Y, Varo I.
Comparative Biochemistry and Physiology C-Toxicology & Pharmacology. 199: 98-105. 2017.

18. In vitro screening for estrogenic endocrine disrupting compounds using Mozambique tilapia and sea bass scales.
Pinto PIS, Esteao MD, Santos S, Andrade A, Power DM.
Comparative Biochemistry and Physiology C-Toxicology & Pharmacology. 199: 106-113. 2017.

19. Effects of the soya isoflavone genistein in early life stages of the Senegalese sole, Solea senegalensis: Thyroid, estrogenic and metabolic biomarkers.
Sarasquete C, Ubeda-Manzanaro M, Ortiz-Delgado JB.
General and Comparative Endocrinology. 250: 136-151. 2017.

20. Steroid bioaccumulation profiles in typical freshwater aquaculture environments of South China and their human health risks via fish consumption.
Liu S, Xu XR, Qi ZH, Chen H, Hao QW, Hu YX, Zhao JL, Ying GG.
Environmental Pollution. 228: 72-81. 2017.

21. Salinity and sensitivity to endocrine disrupting chemicals: A comparison of reproductive endpoints in small-bodied fish exposed under different salinities.
Bosker T, Santoro G, Melvin SD.
Chemosphere. 183: 186-196. 2017.

22. Mallards (Anas platyrhynchos) and wastewater ponds, Part II: Developmental, physiological, morphological and behavioural effects of ingestion of secondary clarified effluent water.
Tierney KB, Welsh PO, Mills M, Nason S, Barreda DR, Paszkowski CA.
Ecotoxicology and Environmental Safety. 143: 336-343. 2017.

23. Benzotriazole ultraviolet stabilizers alter the expression of the thyroid hormone pathway in zebrafish (Danio rerio) embryos.
Liang XF, Li JJ, Martyniuk CJ, Wang J, Mao YF, Lu H, Zha JM.
Chemosphere. 182: 22-30. 2017.

24. Combined effects of increased temperature and endocrine disrupting pollutants on sex determination, survival, and development across generations.
DeCourten BM, Brander SM.
Scientific Reports. 7: 2017.

25. Nosema ceranae, Fipronil and their combination compromise honey bee reproduction via changes in male physiology.
Kairo G, Biron DG, Ben Abdelkader F, Bonnet M, Tchamitchian S, Cousin M, Dussaubat C, Benoit B, Kretzschmar A, Belzunces LP, Brunet JL.
Scientific Reports. 7: 2017.

26. Transcription of ribogenesis genes in fish gonads: Applications in the identification of stages of oogenesis and in environmental monitoring of intersex condition.
Rojo-Bartolome I, Valencia A, Cancio I.
Marine Pollution Bulletin. 121(1-2): 292-301. 2017.

27. Reproductive effects of oestrogenic endocrine disrupting chemicals in Astyanax rivularis inhabiting headwaters of the Velhas River, Brazil.
Weber AA, Moreira DP, Melo RMC, Vieira ABC, Prado PS, da Silva MAN, Bazzoli N, Rizzo E.
Science of the Total Environment. 592: 693-703. 2017.

28. Simultaneous determination of UV-filters and estrogens in aquatic invertebrates by modified quick, easy, cheap, effective, rugged, and safe extraction and liquid chromatography tandem mass spectrometry.
He K, Timm A, Blaney L.
Journal of Chromatography A. 1509: 91-101. 2017.

29. Integration of biological effects, fish histopathology and contaminant measurements for the assessment of fish health: A pilot application in Irish marine waters.
Giltrap M, Ronan J, Bignell JP, Lyons BP, Collins E, Rochford H, McHugh B, McGovern E, Bull L, Wilson J.
Marine Environmental Research. 129: 113-132. 2017.

30. Hepatic transcriptomic profiles from barramundi, Lates calcarifer, as a means of assessing organism health and identifying stressors in rivers in northern Queensland.
Hook SE, Kroon FJ, Greenfield PA, Warne MS, Smith RA, Turner RD.
Marine Environmental Research. 129: 166-179. 2017.

31. Lead and Arsenic Accumulation and Its Effects on Plasma Cortisol Levels in Oreochromis sp.
Thang NQ, Huy BT, Tan LV, Phuong NTK.
Bulletin of Environmental Contamination and Toxicology. 99(2): 187-193. 2017.

32. Reproductive effects of life-cycle exposure to difenoconazole on female marine medaka (Oryzias melastigma).
Dong XC, Zuo ZH, Guo JJ, Li HB, Zhang LM, Chen M, Yang ZB, Wang CG.
Ecotoxicology. 26(6): 772-781. 2017.

33. The DNA methylation status alteration of two steroidogenic genes in gonads of rare minnow after bisphenol A exposure.
Zhang T, Liu Y, Chen H, Gao JC, Zhang YY, Yuan C, Wang ZZ.
Comparative Biochemistry and Physiology C-Toxicology & Pharmacology. 198: 9-18. 2017.

34. Contaminants and energy expenditure in an Arctic seabird: Organochlorine pesticides and perfluoroalkyl substances are associated with metabolic rate in a contrasted manner.
Blevin P, Tartu S, Ellis HI, Chastel O, Bustamante P, Parenteau C, Herzke D, Angelier F, Gabrielsen GW.
Environmental Research. 157: 118-126. 2017.

35. In vitro and in vivo estrogenic activity of BPA, BPF and BPS in zebrafish-specific assays.
Le Fol V, Ait-Aissa S, Sonavane M, Porcher JM, Balaguer P, Cravedi JP, Zalko D, Brion F.
Ecotoxicology and Environmental Safety. 142: 150-156. 2017.

36. Effects of monocrotophos pesticide on cholinergic and dopaminergic neurotransmitter systems during early development in the sea urchin Hemicentrotus pulcherrimus.
Zhang XN, Li SM, Wang CC, Tian H, Wang W, Ru SG.
Toxicology and Applied Pharmacology. 328: 46-53. 2017.

37. Endocrine disruption by environmental gestagens in amphibians - A short review supported by new in vitro data using gonads of Xenopus laevis.
Zikova A, Lorenz C, Hoffmann F, Kleiner W, Lutz I, Stock M, Kloas W.
Chemosphere. 181: 74-82. 2017.

38. Detection of a synthetic sex steroid in the American crocodile (Crocodylus acutus): Evidence for a novel environmental androgen.
Murray CM, Merchant M, Easter M, Padilla S, Garrigos DB, Marin MS, Guyer C.
Chemosphere. 180: 125-129. 2017.

39. Analysis and occurrence of some phenol endocrine disruptors in two marine sites of the northern coast of Sicily (Italy).
Errico S, Nicolucci C, Migliaccio M, Micale V, Mita DG, Diano N.
Marine Pollution Bulletin. 120(1-2): 68-74. 2017.

40. The relative risk and its distribution of endocrine disrupting chemicals, pharmaceuticals and personal care products to freshwater organisms in the Bohai Rim, China.
Zhang M, Shi YJ, Lu YL, Johnson AC, Sarvajayakesavalu S, Liu ZY, Su C, Zhang YQ, Juergens MD, Jin XW.
Science of the Total Environment. 590: 633-642. 2017.

41. Shotgun Proteomics Analysis Discards Alkali Labile Phosphate as a Reliable Method To Assess Vitellogenin Levels in Mytilus galloproyincialis.
Sanchez-Marin P, Fernandez-Gonzalez LE, Mantilla-Aldana L, Diz AP, Beiras R.
Environmental Science & Technology. 51(13): 7572-7580. 2017.

42. Nonylphenol and octylphenol in riverine waters and surface sediments of the Pearl River Estuaries, South China: occurrence, ecological and human health risks.
Zhong MQ, Yin PH, Zhao L.
Water Science and Technology-Water Supply. 17(4): 1070-1079. 2017.

43. Ultrastructural Alterations in Thyrocytes of Zebrafish (Danio rerio) after Exposure to Propylthiouracil and Perchlorate.
Schmidt F, Wolf R, Baumann L, Braunbeck T.
Toxicologic Pathology. 45(5): 649-662. 2017.

44. Paracetamol causes endocrine disruption and hepatotoxicity in male fish Rhamdia quelen after subchronic exposure.
Guiloski IC, Ribas JLC, Piancini LDS, Dagostim AC, Cirio SM, Favaro LF, Boschen SL, Cestari MM, da Cunha C, de Assis HCS.
Environmental Toxicology and Pharmacology. 53: 111-120. 2017.

45. Computational analysis of the ToxCast estrogen receptor agonist assays to predict vitellogenin induction by chemicals in male fish.
Dreier DA, Denslow ND, Martyniuk CJ.
Environmental Toxicology and Pharmacology. 53: 177-183. 2017.

46. A full life-cycle bioassay with Cantareus aspersus shows reproductive effects of a glyphosate-based herbicide suggesting potential endocrine disruption.
Druart C, Gimbert F, Scheifler R, de Vaufleury A.
Environmental Pollution. 226: 240-249. 2017.

47. Intersex and Liver Alterations Induced by Long-Term Sublethal Exposure to 17 Alpha-Ethinylestradiol in Adult Male Cnesterodon Decemmaculatus (Pisces: Poeciliidae).
Young BJ, Lopez GC, Cristos DS, Crespo DC, Somoza GM, Carriquiriborde P.
Environmental Toxicology and Chemistry. 36(7): 1738-1745. 2017.

48. Characterization of Quality of Sediments from Paranagua A Bay (Brazil) by Combined in Vitro Bioassays and Chemical Analyses.
Rizzi J, Perez-Albaladejo E, Fernandes D, Contreras J, Froehner S, Portez C.
Environmental Toxicology and Chemistry. 36(7): 1811-1819. 2017.

49. Nonlethal Laparoscopic Detection of Intersex (Testicular Oocytes) in Largemouth Bass (Micropterus Salmoides) and Smallmouth Bass (Micropterus Dolomieu).
MacLeod AH, Blazer VS, Matsche MA, Yonkos LT.
Environmental Toxicology and Chemistry. 36(7): 1924-1933. 2017.

50. Tributyltin and triphenyltin exposure promotes in vitro adipogenic differentiation but alters the adipocyte phenotype in rainbow trout.
Lutfi E, Riera-Heredia N, Cordoba M, Porte C, Gutierrez J, Capilla E, Navarroa I.
Aquatic Toxicology. 188: 148-158. 2017.

51. The bachelorette: Feinale Siamese fighting fish avoid males exposed to an estrogen mimic.
Dzieweczynski TL, Kane JL.
Behavioural Processes. 140: 169-173. 2017.

52. Fate and effects of nonylphenol in the filamentous fungus Penicillium expansum isolated from the bottom sediments of the Gulf of Finland.
Kuzikova I, Safronova V, Zaytseva T, Medvedeva N.
Journal of Marine Systems. 171: 111-119. 2017.

53. Rapid uptake, biotransformation, esterification and lack of depuration of testosterone and its metabolites by the common mussel, Mytilus spp.
Schwarz TI, Katsiadaki I, Maskrey BH, Scott AP.
Journal of Steroid Biochemistry and Molecular Biology. 171: 54-65. 2017.

54. Transcriptional and Biochemical Alterations in Zebrafish Eleuthero-Embryos (Danio rerio) After Exposure to Synthetic Progestogen Dydrogesterone.
Shi WJ, Ying GG, Huang GY, Liang YQ, Hu LX, Zhao JL, Zhang JN.
Bulletin of Environmental Contamination and Toxicology. 99(1): 39-45. 2017.

55. Evaluation of the toxic effect of endocrine disruptor Bisphenol A (BPA) in the acute and chronic toxicity tests with Pomacea lineata gastropod.
de Andrade ALC, Soares PRL, da Silva SCBL, da Silva MCG, Santos TP, Cadena MRS, Soares PC, Cadena PG.
Comparative Biochemistry and Physiology C-Toxicology & Pharmacology. 197: 1-7. 2017.

56. Tributyltin bioaccumulation and toxic effects in freshwater gastropods Pomacea canaliculata after a chronic exposure: field and laboratory studies.
Martinez ML, Piol MN, Nudelman NS, Guerrero NRV.
Ecotoxicology. 26(5): 691-701. 2017.

57. Effect of methomyl on sex steroid hormone and vitellogenin levels in serum of male tilapia (Oreochromis niloticus) and recovery pattern.
Meng SL, Qiu LP, Hu GD, Fan LM, Song C, Zheng Y, Wu W, Qu JH, Li DD, Chen JZ, Xu P.
Environmental Toxicology. 32(7): 1869-1877. 2017.

58. Muscarinic receptors mediate the endocrine-disrupting effects of an organophosphorus insecticide in zebrafish.
da Rosa JGS, Barcellos HHD, Fagundes M, Variani C, Rossini M, Kalichak F, Koakoski G, Oliveira TA, Idalencio R, Frandoloso R, Piato AL, Barcellos LJG.
Environmental Toxicology. 32(7): 1964-1972. 2017.

59. Teratogenic responses of zebrafish embryos to decabromodiphenyl ether (BDE-209) in the presence of nano-SiO2 particles.
Chao SJ, Huang CP, Chen PC, Huang CP.
Chemosphere. 178: 449-457. 2017.

60. Developmental toxicity and induction of vitellogenin in embryo-larval stages of zebrafish (Danio rerio) exposed to methyl Paraben.
Dambal VY, Selvan KP, Lite C, Barathi S, Santosh W.
Ecotoxicology and Environmental Safety. 141: 113-118. 2017.

61. Benzophenone-type UV filters in surface waters: An assessment of profiles and ecological risks in Shanghai, China.
Wu MH, Xie DG, Xu G, Sun R, Xia XY, Liu WL, Tang L.
Ecotoxicology and Environmental Safety. 141: 235-241. 2017.

62. Chronic exposure to the beta-blocker metoprolol reduces growth and alters gene expression of gonadotropins and vitellogenin in Nile tilapia (Oreochromis niloticus).
Groner F, Hohne C, Kleiner W, Kloas W.
Ecotoxicology and Environmental Safety. 141: 271-279. 2017.

63. Toxic effects of polyethylene terephthalate microparticles and Di(2-ethylhexyl)phthalate on the calanoid copepod, Parvocalanus crassirostris.
Heinder FM, Alajmi F, Huerlimann R, Zeng CS, Newman SJ, Vamvounis G, van Herwerden L.
Ecotoxicology and Environmental Safety. 141: 298-305. 2017.

64. Proteomic response of Macrobrachium rosenbergii hepatopancreas exposed to chlordecone: Identification of endocrine disruption biomarkers?
Lafontaine A, Baiwir D, Joaquim-Justo C, De Pauw E, Lemoine S, Boulange-Lecomte C, Forget-Leray J, Thome JP, Gismondi E.
Ecotoxicology and Environmental Safety. 141: 306-314. 2017.

65. Using a multi-biomarker approach to assess the effects of pollution on sand flathead (Platycephalus bassensis) from Port Phillip Bay, Victoria, Australia.
Fu D, Bridle A, Leef M, Gagnon MM, Hassell KL, Nowak BF.

Marine Pollution Bulletin. 119(1): 211-219. 2017.

66. Effects of polychlorinated biphenyls on metamorphosis of a marine fish Japanese flounder (Paralichthys olivaceus) in relation to thyroid disruption.
Dong YF, Zhang XN, Tian H, Li X, Wang W, Ru SG.
Marine Pollution Bulletin. 119(1): 325-331. 2017.

67. Growth, Development, and Intestinal Remodeling Occurs in the Absence of Thyroid Hormone Receptor alpha in Tadpoles of Xenopus tropicalis.
Choi J, Ishizuya-Oka A, Buchholz DR.
Endocrinology. 158(6): 1623-1633. 2017.

68. Hepatic gene expression profiles of a non-model cyprinid (Barbus plebejus) chronically exposed to river sediments.
Casatta N, Stefani F, Vigano L.
Comparative Biochemistry and Physiology C-Toxicology & Pharmacology. 196: 27-35. 2017.

69. Distribution and bioaccumulation of endocrine disrupting chemicals in water, sediment and fishes in a shallow Chinese freshwater lake: Implications for ecological and human health risks.
Liu D, Wu SM, Xu HZ, Zhang Q, Zhang SH, Shi LL, Yao C, Liu YH, Cheng J.
Ecotoxicology and Environmental Safety. 140: 222-229. 2017.

70. Monocrotophos pesticide affects synthesis and conversion of sex steroids through multiple targets in male goldfish (Carassius auratus).
Tian H, Sun Y, Wang H, Bing X, Wang W, Ru SG.
Scientific Reports. 7: 2017.

71. Effects of Diazinon on 17 beta-estradiol, Plasma Vitellogenin and Liver and Gonad Tissues of Common Carp (Cyprinus carpio, L., 1758).
Korkmaz C, Donmez AE.
Turkish Journal of Fisheries and Aquatic Sciences. 17(3): 629-640. 2017.

72. Conservation Endocrinology.
McCormick SD, Romero LM.
Bioscience. 67(5): 429-442. 2017.

73. Contribution of G protein-coupled estrogen receptor 1 (GPER) to 17 beta-estradiol-induced developmental toxicity in zebrafish.
Diamante G, Menjivar-Cervantes N, Leung MS, Volz DC, Schlenk D.
Aquatic Toxicology. 186: 180-187. 2017.

74. Microcystin-LR retards gonadal maturation through disrupting the growth hormone/insulin-like growth factors system in zebrafish.
Hou J, Su YJ, Lin W, Guo HH, Xie P, Chen J, Gu ZM, Li L.
Ecotoxicology and Environmental Safety. 139: 27-35. 2017.

75. Effects of environmentally relevant concentrations of the anti-inflammatory drug diclofenac in freshwater fish Rhamdia quelen.
Guiloski IC, Piancini LDS, Dagostim AC, Calado SLD, Favaro LF, Boschen SL, Cestari MM, da Cunha C, de Assis HCS.
Ecotoxicology and Environmental Safety. 139: 291-300. 2017.

76. Developmental toxicity and thyroid hormone-disrupting effects of 2,4-dichloro-6-nitrophenol in Chinese rare minnow (Gobiocypris rarus).
Chen R, Yuan LL, Zha JM, Wang ZJ.
Aquatic Toxicology. 185: 40-47. 2017.

77. Assessing the potential for trace organic contaminants commonly found in Australian rivers to induce vitellogenin in the native rainbowfish (Melanotaenia fluviatilis) and the introduced mosquitofish (Gambusia holbrooki).
Scott PD, Coleman HM, Colville A, Lim R, Matthews B, McDonald JA, Miranda A, Neale PA, Nugegoda D, Tremblay LA, Leusch FDL.
Aquatic Toxicology. 185: 105-120. 2017.

78. Diethylstilbestrol, flutamide and their combination impaired the spermatogenesis of male adult zebrafish through disrupting HPG axis, meiosis and apoptosis.
Yin P, Li YW, Chen QL, Liu ZH.

Aquatic Toxicology. 185: 129-137. 2017.

79. Endocrine Active Contaminants in Aquatic Systems and Intersex in Common Sport Fishes.
Pow CSDL, Mac Law J, Kwak TJ, Cope WG, Rice JA, Kullman SW, Aday DD.
Environmental Toxicology and Chemistry. 36(4): 959-968. 2017.

80. Using short-term bioassays to evaluate the endocrine disrupting capacity of the pesticides linuron and fenoxycarb.
Spirhanzlova P, De Groef B, Nicholson FE, Grommen SVH, Marras G, Sebillot A, Demeneix BA, Pallud-Mothre S, Lemkine GF, Tindall AJ, Du Pasquier D.
Comparative Biochemistry and Physiology Toxicology & Pharmacology : CBP. 200: 52-58. 2017.

81. Rapid effects of the aromatase inhibitor fadrozole on steroid production and gene expression in the ovary of female fathead minnows (Pimephales promelas).
Schroeder AL, Ankley GT, Habib T, Garcia-Reyero N, Escalon BL, Jensen KM, Kahl MD, Durhan EJ, Makynen EA, Cavallin JE, Martinovic-Weigelt D, Perkins EJ, Villeneuve DL.
General and Comparative Endocrinology. 252: 79-87. 2017.

82. Sex-specific effects of difenoconazole on the growth hormone endocrine axis in adult zebrafish (Danio rerio).
Teng M, Qi S, Zhu W, Wang Y, Wang D, Yang Y, Li H, Li C, Dong K, Wang C.
Ecotoxicology and Environmental Safety. 144: 402-408. 2017.

83. Exposure to E2 and EE2 environmental concentrations affect different components of the Brain-Pituitary-Gonadal axis in pejerrey fish (Odontesthes bonariensis).
Garriz A, Del Fresno PS, Miranda LA.
Ecotoxicology and Environmental Safety. 144: 45-53. 2017.

84. Warming modulates the effects of the endocrine disruptor progestin levonorgestrel on the zebrafish fitness, ovary maturation kinetics and reproduction success.
Cardoso PG, Rodrigues D, Madureira TV, Oliveira N, Rocha MJ, Rocha E.
Environmental Pollution. 229: 300-311. 2017.

85. Multigenerational effects evaluation of the flame retardant tris(2-butoxyethyl) phosphate (TBOEP) using Daphnia magna.
Giraudo M, Dube M, Lepine M, Gagnon P, Douville M, Houde M.
Aquatic Toxicology. 190: 142-149. 2017.

86. Prenatal transfer of decabromodiphenyl ether (BDE-209) results in disruption of the thyroid system and developmental toxicity in zebrafish offspring.
Han Z, Li Y, Zhang S, Song N, Xu H, Dang Y, Liu C, Giesy JP, Yu H.
Aquatic Toxicology. 190: 46-52. 2017.

**87. A multi-tiered, in vivo, quantitative assay suite for environmental disruptors of thyroid hormone signaling.
Mengeling BJ, Wei Y, Dobrawa LN, Streekstra M, Louisse J, Singh V, Singh L, Lein PJ, Wulff H, Murk AJ, Furlow JD.
Aquatic Toxicology. 190: 1-10. 2017.**

88. Characterizing combined effects of antiestrogenic chemicals on vitellogenin production in rainbow trout (Oncorhynchus mykiss) hepatocytes.
Hultman MT, Petersen K, Tollefsen KE.
Journal of Toxicology and Environmental Health Part A. 1-15. 2017.

89. Release of chitobiase as an indicator of potential molting disruption in juvenile Daphnia magna exposed to the ecdysone receptor agonist 20-hydroxyecdysone.
Song Y, Evenseth LM, Iguchi T, Tollefsen KE.
Journal of Toxicology and Environmental Health Part A. 1-9. 2017.

90. Do environmental factors affect male fathead minnow (Pimephales promelas) response to estrone? Part 1. Dissolved oxygen and sodium chloride.
Feifarek DJ, Shappell NW, Schoenfuss HL.
The Science of the Total Environment. 610-611: 1262-1270. 2017.

91. Exposure to benzophenone-3 and reproductive toxicity: A systematic review of human and animal studies.
Ghazipura M, McGowan R, Arslan A, Hossain T.

Reproductive Toxicology. 73: 175-183. 2017.

92. Multi-year prediction of estrogenicity in municipal wastewater effluents.
Arlos MJ, Parker WJ, Bicudo JR, Law P, Marjan P, Andrews SA, Servos MR.
The Science of the Total Environment. 610-611: 1103-1112. 2017.

93. Triclosan (TCS) and triclocarban (TCC) induce systemic toxic effects in a model organism the nematode Caenorhabditis elegans.
Lenz KA, Pattison C, Ma H.
Environmental Pollution. 231(Pt 1): 462-470. 2017.

94. Endocrine disrupting effects of waterborne fluoxetine exposure on the reproductive axis of female goldfish, Carassius auratus.
Mennigen JA, Zamora JM, Chang JP, Trudeau VL.
Comparative Biochemistry and Physiology Toxicology & Pharmacology. 202: 70-78. 2017.

95. Effects of Bifenthrin Exposure on the Estrogenic and Dopaminergic Pathways in Zebrafish Embryos and Juveniles.
Bertotto LB, Richards J, Gan J, Volz DC, Schlenk D.
Environmental Toxicology and Chemistry. 2017.

96. Evaluation of Wastewater Treatment by Ozonation for Reducing the Toxicity of Contaminants of Emerging Concern to Rainbow Trout (Oncorhynchus Mykiss).
Maya N, Evans J, Nasuhoglu D, Isazadeh S, Yargeau V, Metcalfe CD.
Environmental Toxicology and Chemistry. 2017.

97. Effects of Chronic Cadmium Exposure on Metamorphosis, Skeletal Development and Thyroid Endocrine Disruption in Chinese Toad Bufo Gargarizans Tadpoles.
Sun N, Wang H, Ju Z, Zhao H.
Environmental Toxicology and Chemistry. 2017.

98. Do environmental factors affect male fathead minnow (Pimephales promelas) response to estrone? Part 2. Temperature and food availability.
Shappell NW, Feifarek DJ, Rearick DC, Bartell SE, Schoenfuss HL.
The Science of the Total Environment. 610-611: 32-43. 2017.

99. Interaction of erythromycin and ketoconazole on the neurological, biochemical and behavioral responses in crucian carp.
Liu J, Cai Y, Lu G, Dan X, Wu D, Yan Z.
Environmental Toxicology and Pharmacology. 55: 14-19. 2017.

100. Gonadal intersex in smallmouth bass Micropterus dolomieu from northern Indiana with correlations to molecular biomarkers and anthropogenic chemicals.
Abdel-Moneim A, Deegan D, Gao J, De Perre C, Doucette JS, Jenkinson B, Lee L, Sepulveda MS.
Environmental Pollution. 230: 1099-1107. 2017.

101. Chronic exposures to fungicide pyrimethanil: multi-organ effects on Italian tree frog (Hyla intermedia).
Bernabo I, Guardia A, Macirella R, Tripepi S, Brunelli E.
Scientific Reports. 7(1): 6869-2017.

102. Testicular Oocytes in Smallmouth Bass in Northeastern Minnesota in Relation to Varying Levels of Human Activity.
Kadlec SM, Johnson RD, Mount DR, Olker JH, Borkholder BD, Schoff PK.
Environmental Toxicology and Chemistry. 2017.

103. Parental exposure to microcystin-LR induced thyroid endocrine disruption in zebrafish offspring, a transgenerational toxicity.
Cheng H, Yan W, Wu Q, Liu C, Gong X, Hung TC, Li G.
Environmental Pollution. 230: 981-988. 2017.

104. Effects of BPF on steroid hormone homeostasis and gene expression in the hypothalamic-pituitary-gonadal axis of zebrafish.
Yang Q, Yang X, Liu J, Ren W, Chen Y, Shen S.
Environmental science and pollution research international. 2017.

105. Vitellogenin levels and others biomarkers show evidences of endocrine disruption in fish species from Iguacu River - Southern Brazil.
Yamamoto FY, Garcia JRE, Kupsco A, Oliveira Ribeiro CA.

Chemosphere. 186: 88-99. 2017.

106. Conifer Diterpene Resin Acids Disrupt Juvenile Hormone-Mediated Endocrine Regulation in the Indian Meal Moth Plodia interpunctella.
Oh HW, Yun CS, Jeon JH, Kim JA, Park DS, Ryu HW, Oh SR, Song HH, Shin Y, Jung CS, Shin SW.
Journal of Chemical Ecology. 2017.

107. Short-term atrazine exposure at breeding has no impact on Blanchard's cricket frog (Acris blanchardi) reproductive success.
Hoskins TD, Dellapina M, Boone MD.
Environmental Toxicology and Chemistry. 2017.

108. Endocrine disruption of phenanthrene in the protogynous dusky grouper Epinephelus marginatus (Serranidae: Perciformes).
de Campos MF, Lo Nostro FL, Da Cuna RH, Moreira RG.
General and Comparative Endocrinology. 2017.

109. Dynamic and differential expression of the gonadal aromatase during the process of sexual differentiation in a novel transgenic cyp19a1a-eGFP zebrafish line.
Hinfray N, Sohm F, Caulier M, Chadili E, Piccini B, Torchy C, Porcher JM, Guiguen Y, Brion F.
General and Comparative Endocrinology. 2017.

110. Thermal modulation of anthropogenic estrogen exposure on a freshwater fish at two life stages.
Ward JL, Cox MK, Schoenfuss H.
Hormones and Behavior. 94: 21-32. 2017.

111. Medaka Extended One-Generation Reproduction Test (Meogrt) Evaluating 4-Nonylphenol.
Watanabe H, Horie Y, Takanobu H, Koshio M, Iguchi T, Tatarazako N.
Environmental Toxicology and Chemistry. 2017.

112. Distribution and bioaccumulation of endocrine disrupting chemicals in water, sediment and fishes in a shallow Chinese freshwater lake: Implications for ecological and human health risks.
Dan L, Wu S, Xu H, Zhang Q, Zhang S, Shi L, Yao C, Liu Y, Cheng J.
Ecotoxicology and Environmental Safety. 140: 222-229. 2017.

113. The rise of glyphosate and new opportunities for biosentinel early-warning studies.
Kissane Z, Shephard JM.
Conservation Biology : the Journal of the Society for Conservation Biology. 2017.

114. Waterborne exposure to BPS causes thyroid endocrine disruption in zebrafish larvae.
Zhang D, Zhou E, Yang Z.
Plos One 12(5): e0176927. 2017.