

Introduction. Polychlorinated biphenyls (PCBs), anthropogenic organic compounds with chlorine covalently bound to biphenyl, are a class of endocrine disruptors associated with irregular menses, growth and development delay, increased cancer risk, thyroid disorders and an increased risk of diabetes. Higher levels of PCBs have been related to polycystic ovary syndrome (PCOS). PCBs are fairly resistant to biotransformation and as a result bioaccumulate in the food chain. PCB toxicity depends on their structure, with coplanar PCBs being most toxic (akin to dioxins); therefore, PCB subtypes were determined to see if they differed in women with PCOS compared to normal controls. **Methods.** PCB levels were compared in Caucasian women with (n=29) and without (n=30) PCOS and related to metabolic features. PCBs were fractionated then analysed by high-resolution gas chromatography-unit resolution mass spectrometry. **Results.** The control and PCOS groups were age and BMI matched (p=ns); insulin resistance was not different (HOMA 1.7 ± 1.0 v 2 ± 1.6 , p=ns) but free androgen index was increased in PCOS (p<0.004). PCB-118, 138, 153 and 180 were found in all subjects, whilst fewer subjects showed PCB-28(15/59), PCB-52(4/59) or PCB-101(26/59). There was no difference for PCB-188,138,153 and 180 between controls and PCOS, but all correlated with increasing age (p<0.01) and decreasing estimated glomerular filtration rate (p<0.05); no correlations with BMI, HOMA, testosterone, TSH or fT3 were found; however, PCB-118 (the only coplanar PCB detected in all participants) associated with increased fT4 (p<0.05). **Conclusion.** Despite PCBs being banned over a decade ago, PCBs were detected, but did not differ between age and BMI matched women with and without PCOS. Thyroid dysfunction may be only associated with toxic coplanar PCBs, such as PCB-118 that was associated with higher fT4 levels.