



# Agilent Technologies

## **Agilent CP-Sil 8 CB for PCB**

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# Environmental

## [Effects of microplastic on fitness and PCB bioaccumulation by the lugworm \*Arenicola marina\* \(L.\)](#)

*Environmental Science and Technology*, **47**, 593-600 (2013)  
Ellen Besseling *et al.*

**Tags**  
CP-Sil 5/C18 CB for PCB, CP-Sil 8 CB for PCB, 5890, 7673, environmental, soils, sludges and sediments

### **Abstract**

It has been speculated that marine microplastics may cause negative effects on benthic marine organisms and increase bioaccumulation of persistent organic pollutants (POPs). Here, we provide the first controlled study of plastic effects on benthic organisms including transfer of POPs. The effects of polystyrene (PS) microplastic on survival, activity, and bodyweight, as well as the transfer of 19 polychlorinated biphenyls (PCBs), were assessed in bioassays with *Arenicola marina* (L.). PS was pre-equilibrated in natively contaminated sediment. A positive relation was observed between microplastic concentration in the sediment and both uptake of plastic particles and weight loss by *A. marina*. Furthermore, a reduction in feeding activity was observed at a PS dose of 7.4% dry weight. A low PS dose of 0.074% increased bioaccumulation of PCBs by a factor of 1.1–3.6, an effect that was significant for  $\Sigma$ PCBs and several individual congeners. At higher doses, bioaccumulation decreased compared to the low dose, which however, was only significant for PCB105. PS had statistically significant effects on the organisms' fitness and bioaccumulation, but the magnitude of the effects was not high. This may be different for sites with different plastic concentrations, or plastics with a higher affinity for POPs. Reprinted with permission from *Environmental Science and Technology*. © 2013 American Chemical Society.

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[Black carbon and ecological factors affect in situ biota to sediment accumulation factors for hydrophobic organic compounds in flood plain lakes](#)

*Environmental Science and Technology*, **39**,  
3101-3109 (2005)

Caroline T. A. Moermond, John J. G. Zwolsman,  
Albert A. Koelmans

**Tags**

CP-Sil 5/C18 CB for PCB, CP-Sil 8 CB for PCB,  
5890, 7673, environmental, soils, sludges and  
sediments

**Abstract**

Ecological factors may play an important role in the bioaccumulation of polychlorobiphenyls (PCBs) and polyaromatic hydrocarbons (PAHs). Geochemical and bioaccumulation behavior of these chemicals also appears to be related to the presence of black carbon (BC) in sediment. In situ PCB and PAH biota to sediment accumulation factors (BSAF) for benthic invertebrates, as well as 6h Tenax-extractable (fast-desorbing) concentrations and lake characteristics (including BC in sediment), were determined for different seasons in chemically similar but ecologically different lakes (fish-dominated turbid, algae-dominated turbid, and macrophyte-dominated). BSAFs could be explained with a model including a term for Freundlich sorption to BC and a term for uptake from fast-desorbing concentrations in ingested sediments. Freundlich coefficients for in situ sorption to BC ( $K_F$ ) were calculated from *slow* desorbing fractions and BC contents and agreed well with literature values for  $K_F$ . Furthermore, in contrast to BSAFs based on total extracted concentrations, Tenax-based BSAF showed a strong positive correlation with  $\log K_{OW}$ . We therefore argue that BC caused slow desorption and limited BSAFs in these lakes. Seasonal and lake effects on BSAFs were detected, while the differences between oligochaetes and other invertebrates were small for PCBs and within a factor of 10 for PAHs. BSAFs for pyrogenic PAHs were much lower than for PCBs, which was explained by stronger sorption to BC and lesser uptake from ingested sediment. Reprinted with permission from Environmental Science and Technology. © 2005 American Chemical Society.

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# Food testing and agriculture

## [Analytical Techniques of Non Dioxin-Like Polychlorinated Biphenyls](#)

*Journal of the National Food Reference Laboratory*, **1**, 45-52 (2010)  
Gül Çelik Çakiroğullari, Devrim Kiliç

### Tags

CP-Sil 5/C18 CB for PCB, CP-Sil 8 CB for PCB, DB-5, DB-5ms, HP-5, HP-5ms, food testing and agriculture, persistent organic pollutants

### Abstract

The authors describe a range of analytical techniques for the detection of PCBs, using Agilent J&W GC columns. Published by the Turkish National Food Reference Laboratory.

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