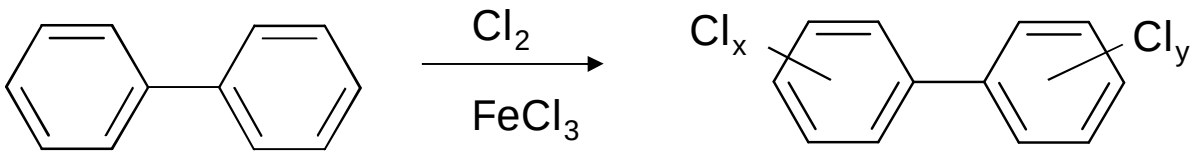
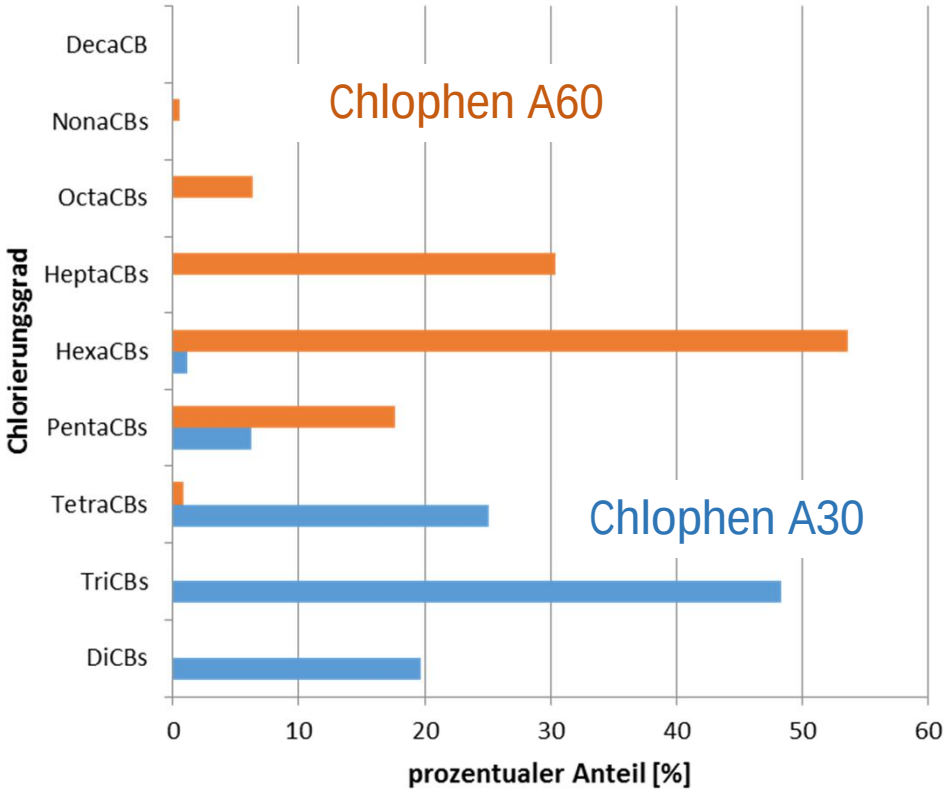
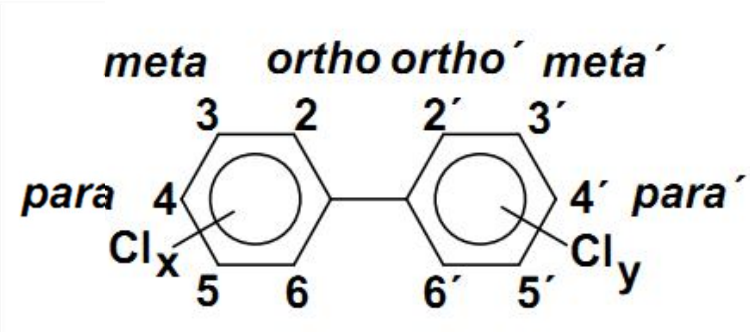
Synthese von polychlorierten Biphenylen





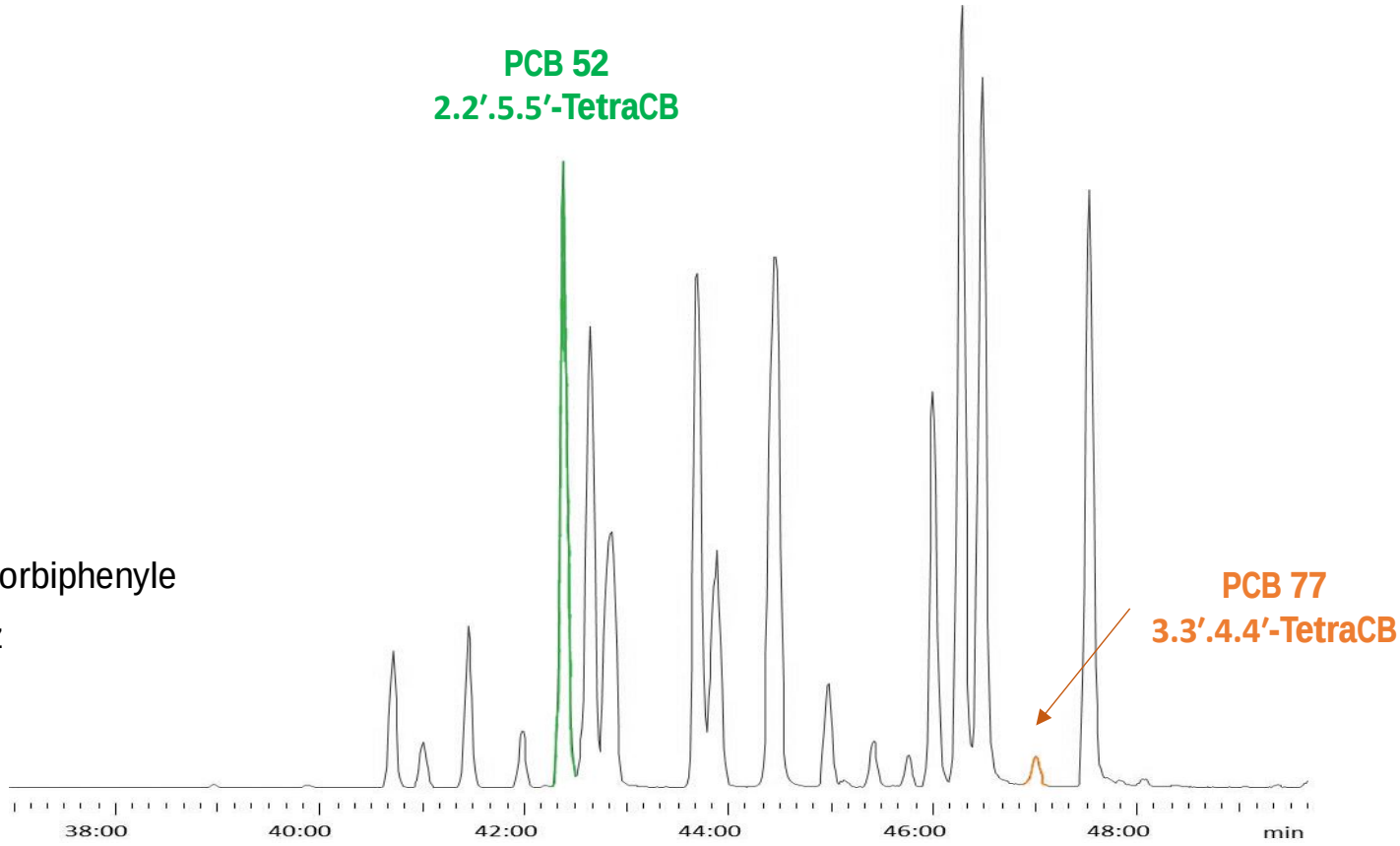


SCHULZ. D.E., PETRICK. G., DUINKER. J.C., 1989. Complete characterization of polychlorinated biphenyl congeners in commercial Aroclor and Clophen mixtures by multidimensional gas chromatography-electron capture detection. Environ. Sci. Technol. 23. 852–859.

Ionenspur tetrachlorierter Biphenyle in Clophen A 30

Tetrachlorbiphenyle

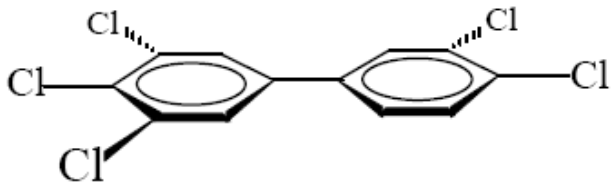
292 m/z



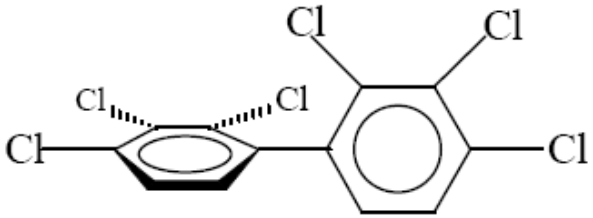
Koplanare oder non-*ortho* PCB ; dl-PCB

2 Chlorsubstituenten in beiden *para*-Positionen und mind. 2 Chlorsubstituenten in den *meta*-Positionen

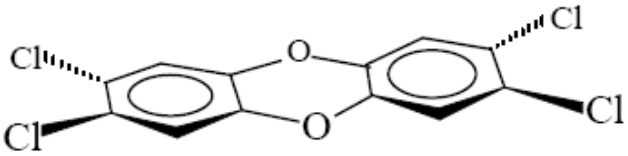
⟶ Cytochrom P450 1A1 und 1A2



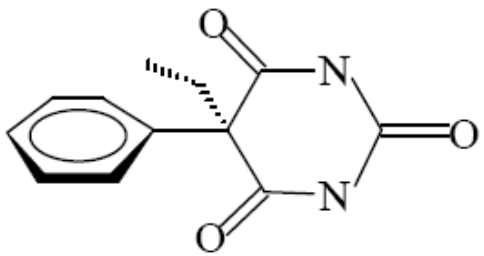
PCB 126



PCB 128



***2,3,7,8*-TCDD**



Phenobarbital

Mindestens zwei Chlorsubstituenten in *ortho*-Position

⟶ Cytochrom P450 2B1
Neuro- und immunotoxisch

Prozentuale Anteile von dl-PCBs in kommerziellen PCB Mischungen

		Clophen A30	Clophen A40	Clophen A50	Clophen A60
TetraCBs	PCB 77	0.39	0.66	0	0
	PCB 81	0	0	0	0
PentaCBs	PCB 105	0.49	1.43	1.9	0.12
	PCB 114	0	0.17	0	0
	PCB 118	0.42	2.47	10.9	1.74
	PCB 123	0.55	0.56	0.85	0
	PCB 126	0	0	0.08	0.46
HexaCBs	PCB 156	0	0.23	1.43	1.27
	PCB 157	0	0.12	0.31	0.24
	PCB 167	0	0.08	0.35	0.49
	PCB 169	0	0	0	0
HeptaCBs	PCB 189	0	0	0	0.4

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Abschätzung PCB-Gehalte in einer Umweltprobe

Messung	Konzentration PCB 52 [ng/g]	kalk. Konz. TetraCBs [1] [ng/g]	kalk. Konz. Chlophen A30[2] [ng/g]	Konz. dl-PCB 77 kalk. [3] [ng/g]
LANUV: 13.05.15 Grubenwasser Zeche Ost (Haus Aden)	51	450 – 600	1800 – 2400	1.8 – 9.4

[1] Anteil PCB 52 an TetraCBs in Clophen A30 laut Literaturangabe: 8.5 – 11.5 %
[2] Anteil PCB 52 an Clophen A30 laut Literaturangabe: 2.2 – 2.8 %
[3] Anteil PCB 77 an Clophen A30 laut Literaturangabe: 0.1 – 0.39 %

SCHULTE. E., MALISCH. R., 1983. Berechnung der wahren PCB-Gehalte in Umweltproben. Fresenius. Z. Anal. Chem. 314. 545 – 551.
SCHULZ. D.E., PETRICK. G., DUINKER. J.C., 1989. Complete characterization of polychlorinated biphenyl congeners in commercial Aroclor and Clophen mixtures by multidimensional gas chromatography-electron capture detection. Environ. Sci. Technol. 23. 852–859.
TAKASUGA.T., SENTHILKUMAR.K., MATSUMURA.T., SHIOZAKI.K..SAKAI.S., 2006. Isotope dilution analysis of polychlorinated biphenyls (PCBs) in transformer oil and global commercial PCB formulations by high resolution gas chromatography–high resolution mass spectrometry. Chemosphere 62. 469–484.