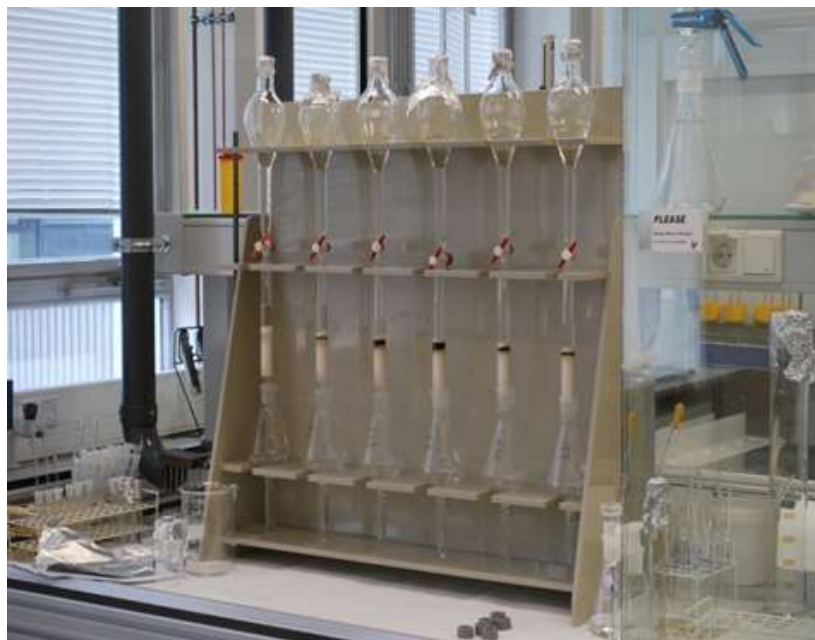




VU University Amsterdam



# Role of the Reference Laboratories

Jacob de Boer

 IVM Institute for  
Environmental Studies

# Overview

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Technical Advice



Interlaboratory Studies



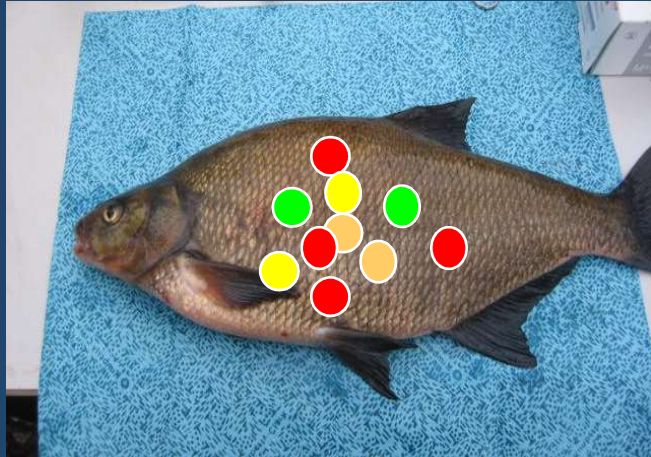
Training, mirror analyses



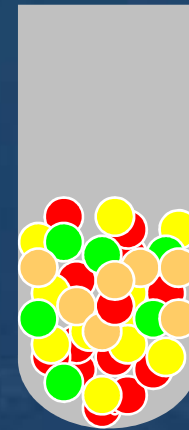
Communication



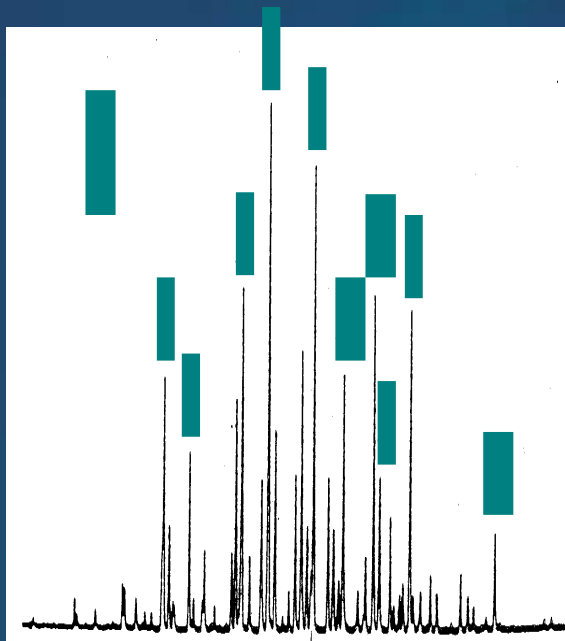
# Analysis



Extraction



Analysis



Identification  
Quantification



Referentie materiaal :	IRM 406; kabeljauwlever														Periode opbouw kaart										01/1/1991			t/m			17/1/2001		
Referentie waarde :	n.v.t.														Totaal aantal waarnemingen voor opbouw kaart = 150 waarvan 2 waarnemingen geschrappt.																		
Soort analyse :	PCB analyse volgens ISW A002														<b>Kaart 8</b>																		
Datum	0	2	2	2	2	0	0	2	2	2	2	0	0	2	0	1	2	1	2	1	0	0	0	2	0	1	0	0	1	1	1		
	7	3	6	6	8	2	9	1	8	2	8	7	4	5	1	2	3	8	7	4	6	7	2	8	1	5	4	1	5	9			
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	F	M	M	M	M	A	M	J	J	J	J	S	S	O	O	O	N	N	D	F	F	F	J	F	F	F	M	M	A	S			
	e	a	a	a	a	p	a	u	u	u	u	e	e	c	c	c	o	o	e	e	e	e	a	e	e	a	a	u	e				
	b	r	r	r	r	r	y	n	n	n	n	p	p	t	t	t	v	v	c	b	b	b	n	b	b	r	r	g	p				
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l				
Analist	IV	ML	ML	ML	ML	ML	ML	IV	ML	IV	ML	ML	QD	IV	ML	QD	QD	ML	ML	ML	ML	ML	QD	ML	QD	IV	QD	ML	ML	ML			
Serie	7	147	148	149	150	151	152	9	154	10	153	155	121	11	156	122	123	157	158	160	159	160b	124	161	125	12	126	162	163	165			

**PCB 118 gehalte in IRM 406**

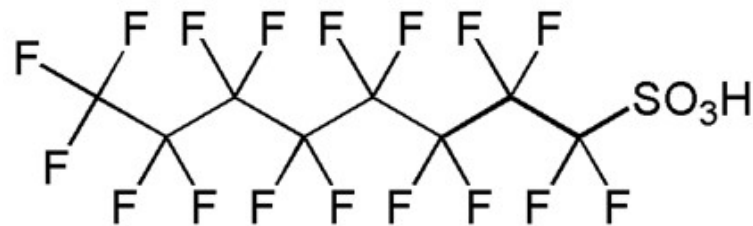
Waarneming	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	
Gehalte in µg/kg	445	444	452	465	446	477	522	432	485	477	503	474	473	461	414	429	473	463	475	489	442	493	450	465	456	431	474	424	443	456	
opmerking						s19	s19	s8(69)	s8(69)	s19	s19	s8(69)	s8(69)	s8(69)	s8(69)	s8(69)	s19(76)	s8(69)	s8(69)	s19(76)	s8(69)	s8(69)	s8(69)	s8(69)	s8(69)	s8(69)	s8(69)	s8(69)	s8(69)	s8(69)	
Afkeuring = X																															

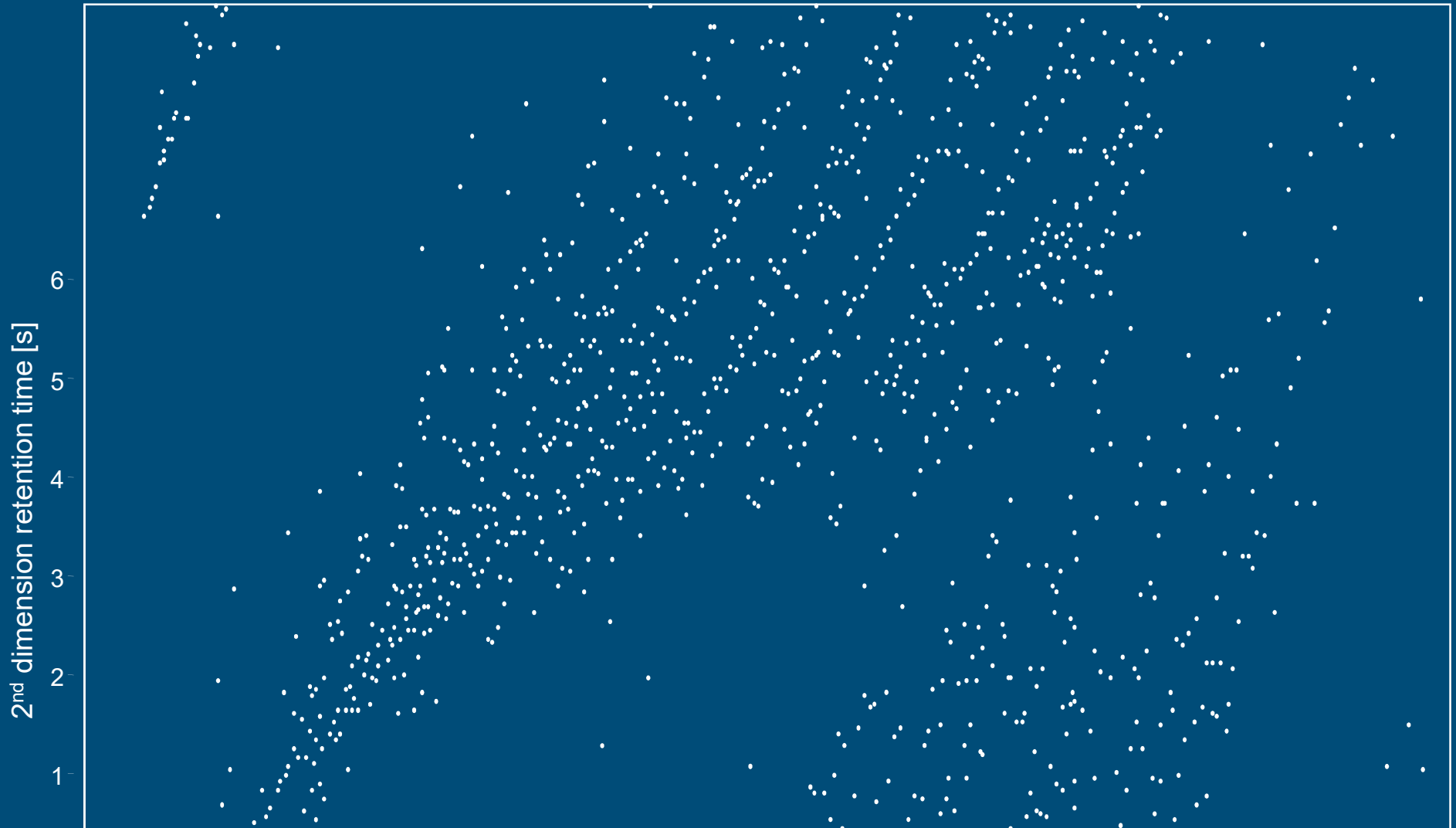
Gegevens over voorgaande perioden	
Gem +3S	--> 552.8
Gem +2S	--> 520.5
Gem	--> 455.9
Gem -2S	--> 391.4
Gem -3S	--> 359.1
N	--> 148
N_TOTAAL	--> 150
N_GESCHRAPT	--> 2
Stdev	--> 32.3
Gegevens over deze periode	
Gem +3S	--> 534.3
Gem +2S	--> 509.9
Gem	--> 461.1
Gem -2S	--> 412.3
Gem -3S	--> 387.9
N	--> 30
Stdev	--> 24.4
Gegevens over alle waarnemingen	
Gem +3S	--> 545.3
Gem +2S	--> 513.7
Gem	--> 450.4
Gem -2S	--> 387.2
Gem -3S	--> 355.5
N	--> 243
N_TOTAAL	--> 250
N_GESCHRAPT	--> 7
Stdev	--> 31.6
Na 30 waarnemingen:	
S <sub>(ALLE VOORGAANDE WAARNEMINGEN)</sub>	
0.75 < ----- < 1.48	
S <sub>(DEZE PERIODE)</sub>	
<b>1.32</b>	
<b>conform</b>	

# POPs which require more attention

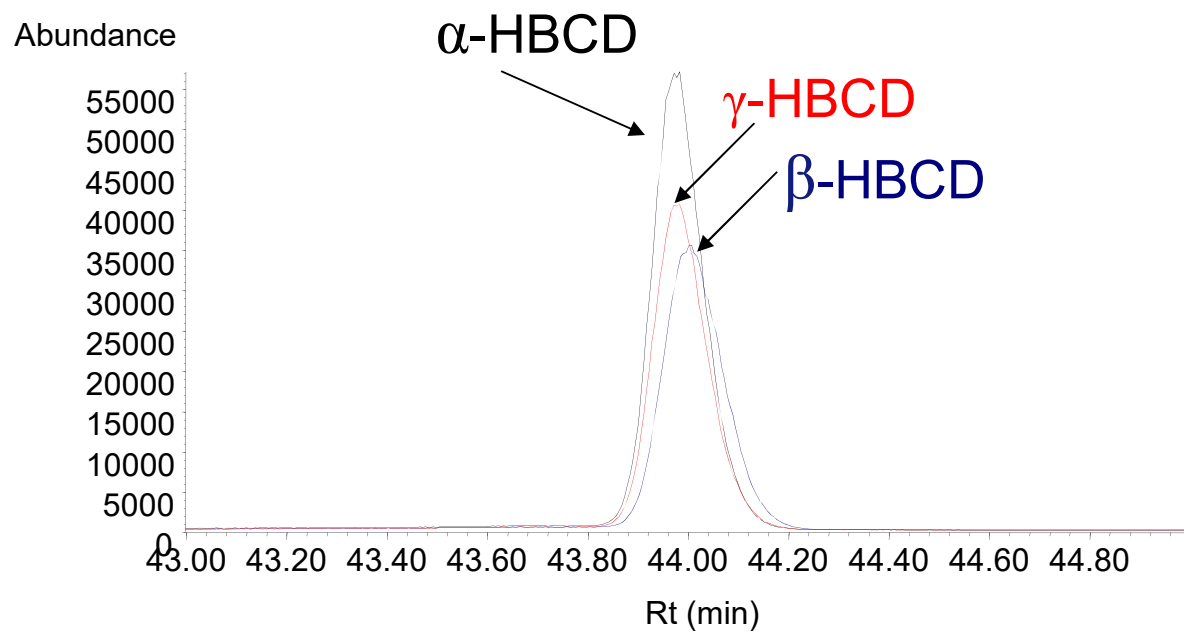
- Chlordecone
- Mirex
- Endosulphan
- Toxaphene
- HBCD congeners
- PFAS



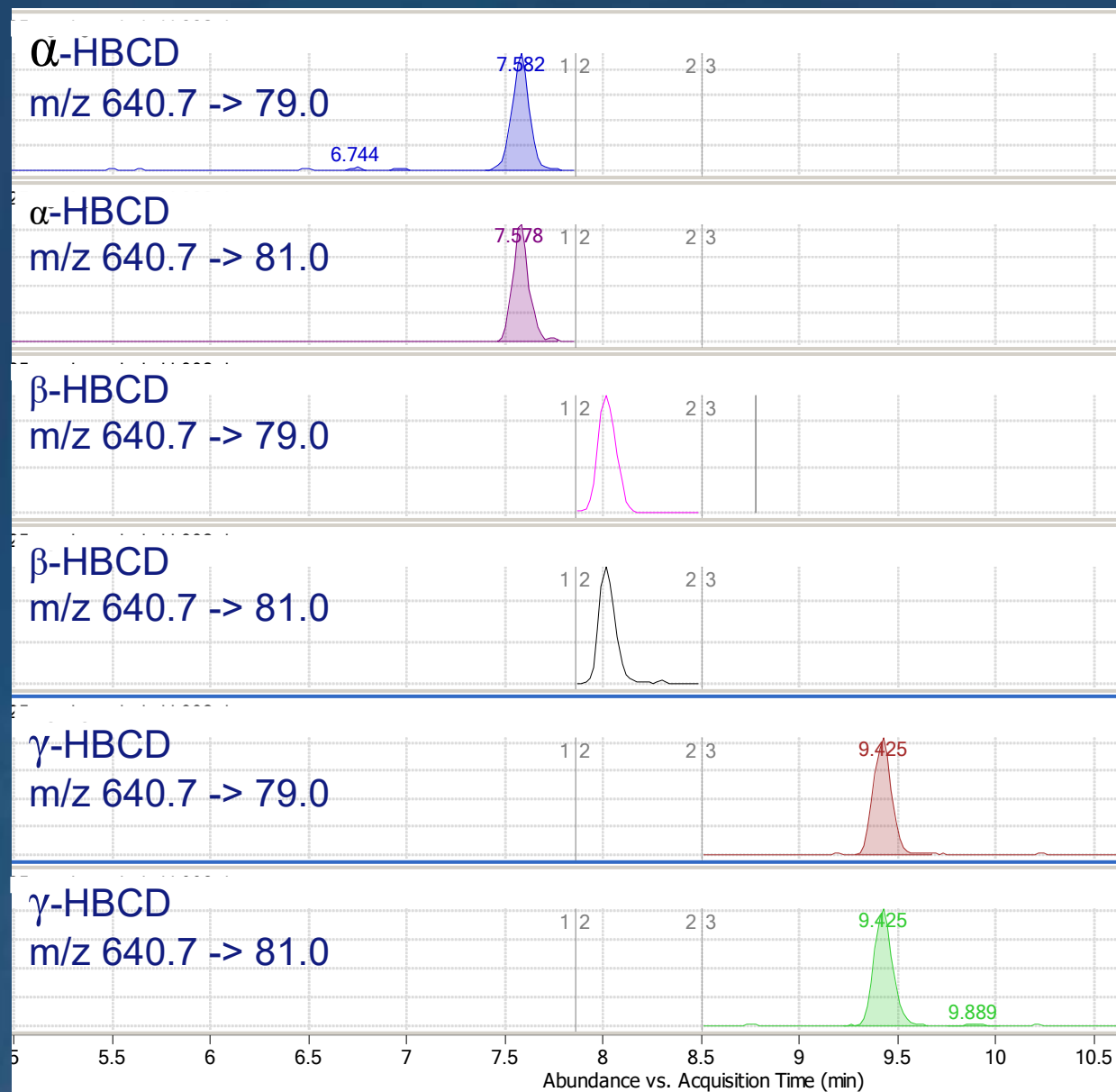
# Toxaphene, APEX Plot



# GC-MS ECNI response HBCD isomers



# HBCD congeners with LC-MS/MS





# Interlaboratory Study Results

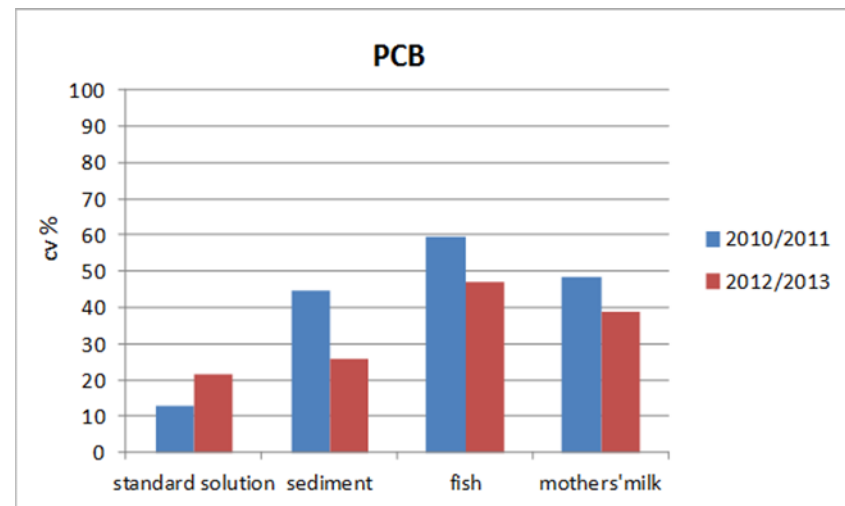
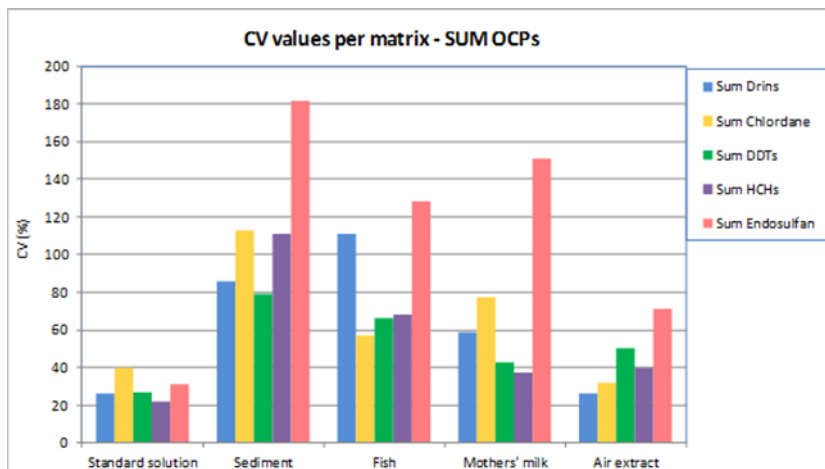
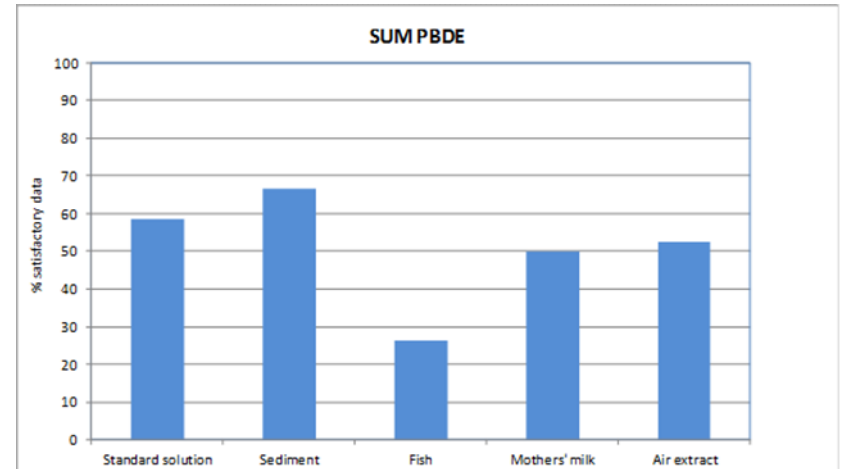
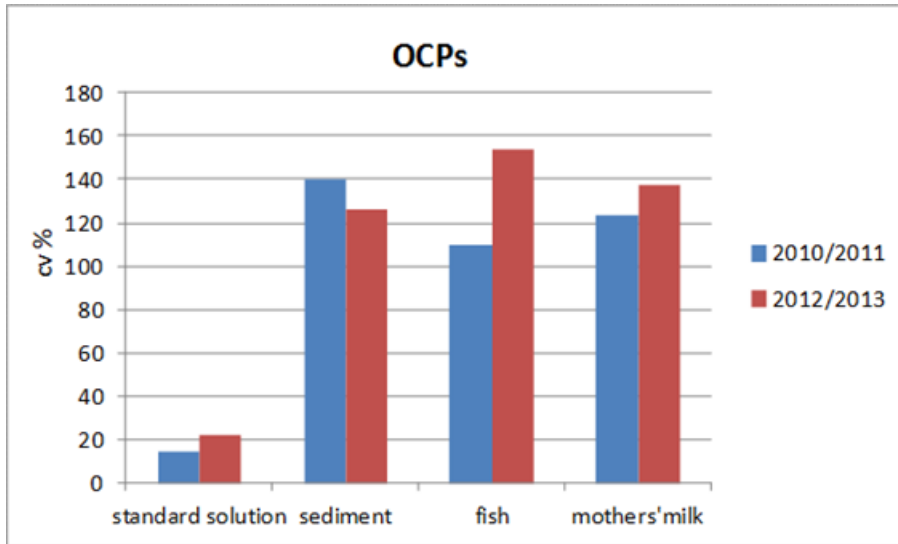
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“Regular, routine analyses instead of one-off projects would help to build up the required level of experience for this type of analysis”

“Participating laboratories should maintain and improve the level of expertise in their laboratory by ongoing and frequent POPs analysis”

“Participating laboratories are encouraged to train their own technicians by repeatedly analyzing certified reference materials and internal laboratory reference materials”

# Interlaboratory Study Results



# Training

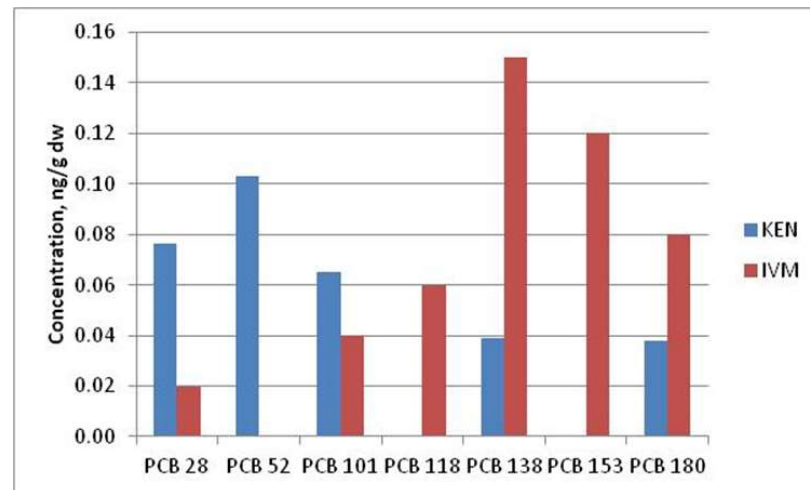
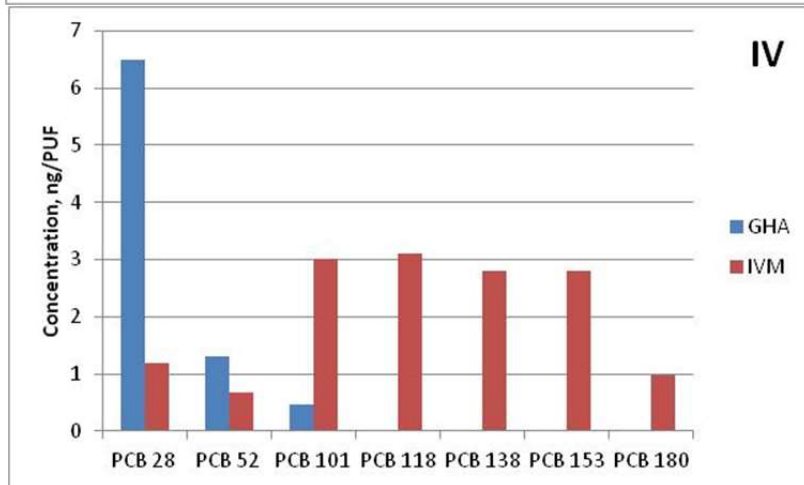
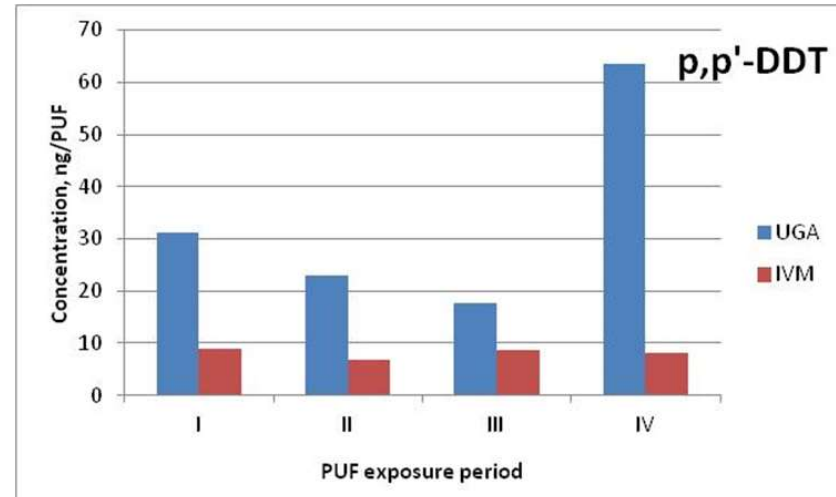
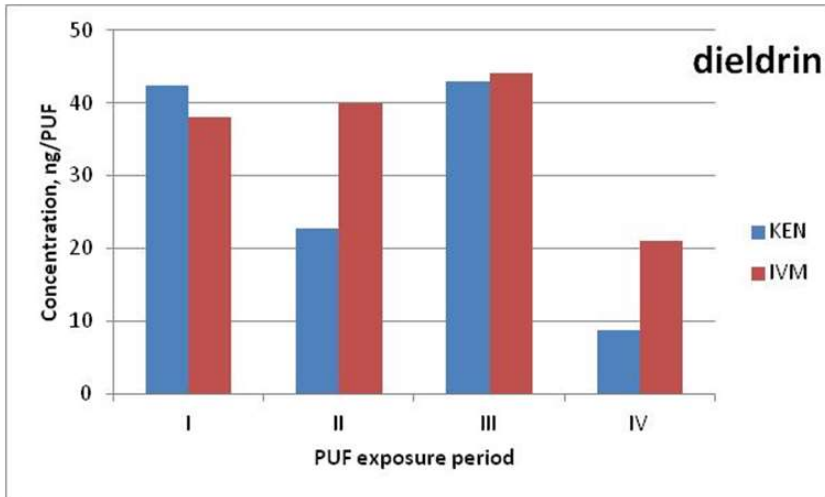
- On-site training: needs-oriented
- Mirror analyses: your choice
- Advise on consumables
- Background information, literature



# Mirror analyses

Country	PUFs (n)	National samples (n)
<b>West Africa</b>		
Mali	4	2 smoked fish
Senegal	4	1 sediment 1 soil
Ghana	4	3 fish
Nigeria	4	1 fish 1 sediment 1 soil
Togo	4	1 sediment 1 soil 1 fish 1 maize 1 beans 1 maize leaves
DR Congo	4	1 fish 1 cassava flour 1 cornstarch 3 sediment
<b>East and South Africa</b>		
Egypt	0	1 baby milk powder 1 fishmeal 1 agricultural soil
Ethiopia	4	4 sediments
Kenya	4	1 sediment 1 soil 1 fish
Uganda	4	1 fish 2 sediments
Zambia	4	1 fish 1 sediment
Mauritius	4	1 fish 2 sediments
<b>Total samples</b>	<b>44</b>	<b>43</b>

# Mirro analyses in African countries



# Communication

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- Only open communication will lead to real learning
- Cultural differences
- Making appointments
- Do what you have promised
- Use skype and phone