

Investigation on PCDDs/PCDFs and several PCBs in Fish liver oil capsules



**Analysis and report provided by
ERGO Forschungsgesellschaft mbH, Germany
for the Food Safety Authority of Ireland**

Table of contents

1	Order	2
2	Sampling	2
3	Description of sample	2
4	General information about analytes	3
4.1	General information about PCDDs/PCDFs	3
4.2	General Information about PCBs	4
5	Analytical Procedure	6
5.1	Analytical procedure (PCDDs/PCDFs, "WHO-PCBs")	6
5.2	Analytical procedure ("other PCBs" including "Marker"-PCBs)	8
6	Results	8
6.1	Results original wet weight based	9
7	Final Remarks	10

1 Order

The order was given in writing on 14.08.2001 by the client mentioned above.

The order has the following internal project code: A-0690-01-400.

2 Sampling

The sampling was done resp. organized by the customer.

3 Description of sample

Sample code	Client code	Matrix	Receipt of sample	Date of the test performance
H-01-08-0572	Einstein's DHA capsules X 30 FOS 001/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0573	Pure Cod Liver Oil capsules X 30 FOS 002/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0574	Eskimo-3 FOS 003/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0575	Pure Cod Liver Oil capsules X 60 FOS 006/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0576	Cod Liver Oil Powder FOS 007/2001	Fish liver oil capsules	22.08.2001	06.09.2001 – 27.11.2001
H-01-08-0577	Omega 3 Fish Oil capsules X 90 FOS 008/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0578	Cod Liver Oil capsules X 30 FOS 010/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0579	Norwegian Cod Liver Oil Capsules X 100 FOS 011/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0580	Natural Cod Liver Oil Capsules X 100 FOS 014/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001

Sample code	Client code	Matrix	Receipt of sample	Date of the test performance
H-01-08-0581	Cod Liver Oil FOS 015/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0582	Cod Liver Oil X 30 FOS 016/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0583	Cod Liver Oil FOS 017/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0584	One a day pure cod liver oil X 60 FOS 018/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0585	One a day norwegian cod liver oil FOS 019/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001
H-01-08-0586	Cod Liver Oil FOS 020/2001	Fish liver oil capsules	22.08.2001	29.08.2001 – 27.11.2001

4 General information about analytes

4.1 General information about PCDDs/PCDFs

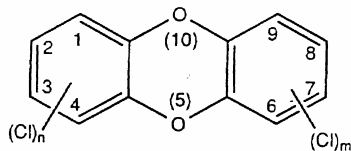
Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) are unwanted by-products in a variety of industrial and thermal processes. However, their levels in the environment increased significantly with the beginning of the industrial chlorine industry in this century. Because of their many sources, PCDDs and PCDFs are ubiquitously distributed. The degree of chlorination of the tricyclic components varies between 1 and 8 atoms per molecule. The overall number of dioxins and furans is 75 and 135, respectively.

In humans, only the isomeres with 2,3,7,8-substitution are found, totaling seven dioxins and 10 furans. Humans may become contaminated with PCDD/PCDF through environmental (background), occupational, or accidental exposure.

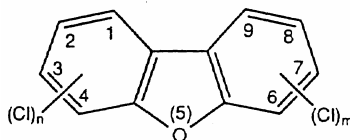
It is generally agreed that for the normal population, food represents the main route of environmental exposure to PCDD/s/PCDFs. Usually more than 90% of the total daily intake of these contaminants derives from food.

In contrast, exposure via other routes, such as inhalation and ingestion of particles from air, ingestion of contaminated soil, and dermal absorption, normally contributes less than 10% of daily intake. Because humans are the high end of the food chain, it becomes obvious that human tissue may contain relatively high amounts of xenobiotics such as PCDDs/PCDFs. Because of the lipophilic nature of these two classes of environmental contaminants, food-stuffs of animal origin are of special importance.

The following figure shows the general structure of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs):

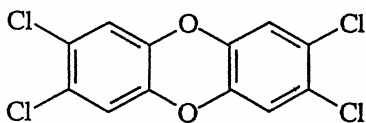


Polychlorinated dibenzo-p-dioxins (PCDDs)



Polychlorinated dibenzofurans (PCDFs)

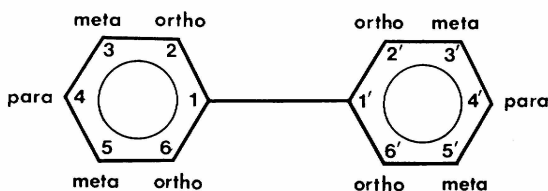
The following figure shows the formula of 2,3,7,8-Tetrachlorodibenzo-p-dioxin, the most toxic compound of PCDDs/PCDFs.



2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN

4.2 General Information about PCBs






























The following figure shows the general structure of a biphenyl :



Polychlorinated biphenyls (PCBs) are produced by substituting chlorine atoms for some or all of the hydrogen atoms of biphenyl molecules. The overall number of polychlorinated biphenyls is 209. The degree of chlorination of the biphenyl varies between one and ten. Some years ago the TEF system has been broadened to include certain dioxin-like PCBs. In 1993 an international WHO committee agreed on TEFs for certain PCB congeners (which bind to the Ah-receptor). Most of the dioxin-like PCBs were assigned much lower TEF values than dioxins.

The following table shows the TEF values for human beings and mammals laid down by the WHO in 1997 :

International TEFs for human beings and mammals

PCDDs (dioxins)		TEF	PCBs with no chlorine at <i>ortho</i> positions ('coplanar' PCBs)		TEF
2,3,7,8-TCDD ('TCDD')		1	3,3',4,4'-TCB		0.0001
1,2,3,7,8-PeCDD		1	3,4,4',5-TCB		0.0001
1,2,3,4,7,8-HxCDD		0.1	3,3',4,4',5-PeCB		0.1
1,2,3,7,8,9-HxCDD		0.1	3,3',4,4',5,5'-HxCB		0.01
1,2,3,6,7,8-HxCDD		0.1			
1,2,3,4,6,7,8-HpCDD		0.01			
OCDD		0.0001			
PCDFs (furans)			PCBs with one chlorine atom at <i>ortho</i> position		
2,3,7,8-TCDF		0.1	2,3,3',4,4'-PeCB		0.0001
1,2,3,7,8-PeCDF		0.05	2,3,4,4',5-PeCB		0.0005
2,3,4,7,8-PeCDF		0.5	2,3',4,4',5-PeCB		0.0001
1,2,3,4,7,8-HxCDF		0.1	2',3,4,4',5-PeCB		0.0001
1,2,3,7,8,9-HxCDF		0.1	2,3,3',4,4',5-HxCB		0.0005
1,2,3,6,7,8-HxCDF		0.1	2,3,3',4,4',5'-HxCB		0.0005
2,3,4,6,7,8-HxCDF		0.1	2,3',4,4',5,5'-HxCB		0.00001
1,2,3,4,6,7,8-HpCDF		0.01	2,3,3',4,4',5,5'-HpCB		0.0001
1,2,3,4,7,8,9-HpCDF		0.01			
OCDF		0.0001			

T = tetra (4 chlorine atoms)
Pe = penta (5 chlorine atoms)
Hx = hexa (6 chlorine atoms)
Hp = hepta (7 chlorine atoms)
O = octa (8 chlorine atoms)

Source : *Persistent Organic Pollutants*, Monitor 16, 2000, Swedish Environmental Protection Agency

5 Analytical Procedure

In the following the analytical procedures for the analysis of PCDDs/PCDFs, "Marker-PCBs" and "WHO-PCBs" are shown.

5.1 Analytical procedure (PCDDs/PCDFs, "WHO-PCBs")

We would like to mention, that the measurements are done *by high resolution mass spectrometry (HRMS)*, which guarantees high specificity and high sensitivity.

Prior the extraction following ^{13}C -UL-labeled internal standards are added to the sample:

Internal standards (^{13}C -UL), PCDDs/PCDFs			
PCDDs		PCDFs	
2,3,7,8	-Tetra-CDD	2,3,7,8	-Tetra-CDF
1,2,3,7,8	-Penta-CDD	1,2,3,7,8	-Penta-CDF
		2,3,4,7,8	-Penta-CDF
1,2,3,4,7,8	-Hexa-CDD	1,2,3,4,7,8	-Hexa-CDF
1,2,3,6,7,8	-Hexa-CDD	1,2,3,6,7,8	-Hexa-CDF
1,2,3,7,8,9	-Hexa-CDD	1,2,3,7,8,9	-Hexa-CDF
		2,3,4,6,7,8	-Hexa-CDF
1,2,3,4,6,7,8	-Hepta-CDD	1,2,3,4,6,7,8	-Hepta-CDF
		1,2,3,4,7,8,9	-Hepta-CDF
1,2,3,4,6,7,8,9	-Octa-CDD	1,2,3,4,6,7,8,9	-Octa-CDF

	Internal standards (^{13}C -UL), WHO-PCBs		
	Compound		IUPAC Code
Non-ortho PCBs	3,3',4,4'	-Tetra-CB	PCB 77
	3,4,4',5	-Tetra-CB	PCB 81
	3,3',4,4',5	-Penta-CB	PCB 126
	3,3',4,4',5,5'	-Hexa-CB	PCB 169
Mono-ortho PCBs	2,3,3',4,4'	-Penta-CB	PCB 105
	2,3,4,4',5	-Penta-CB	PCB 114
	2,3',4,4',5	-Penta-CB	PCB 118
	2',3,4,4',5	-Penta-CB	PCB 123
	2,3,3',4,4',5	-Hexa-CB	PCB 156
	2,3,3',4,4',5'	-Hexa-CB	PCB 157
	2,3',4,4',5,5'	-Hexa-CB	PCB 167
	2,3,3',4,4',5,5'	-Hepta-CB	PCB 189

After spiking, the samples are extracted/solved with appropriate solvents for ultratrace-analyses (e.g. nanograde) by using a solid / lipid extraction.

The clean up is done on a multicolumn system (involving carbon-on-glasfibre). The measurement is done by means of high resolution gaschromatography and high resolution mass spectrometry (HRGC/HRMS) with VG-AutoSpec and/or Finnigan MAT 95 XL using DB-5 capillary columns.

For each component 2 isotope masses are measured. The quantification is carried out by the use of internal/external standard mixtures (isotope dilution method). Following PCDDs/PCDFs and PCBs are determined and reported.

PCDDs/PCDFs			
PCDDs		PCDFs	
2,3,7,8	-Tetra-CDD	2,3,7,8	-Tetra-CDF
1,2,3,7,8	-Penta-CDD	1,2,3,7,8	-Penta-CDF
		2,3,4,7,8	-Penta-CDF
1,2,3,4,7,8	-Hexa-CDD	1,2,3,4,7,8	-Hexa-CDF
1,2,3,6,7,8	-Hexa-CDD	1,2,3,6,7,8	-Hexa-CDF
1,2,3,7,8,9	-Hexa-CDD	1,2,3,7,8,9	-Hexa-CDF
		2,3,4,6,7,8	-Hexa-CDF
1,2,3,4,6,7,8	-Hepta-CDD	1,2,3,4,6,7,8	-Hepta-CDF
		1,2,3,4,7,8,9	-Hepta-CDF
1,2,3,4,6,7,8,9	-Octa-CDD	1,2,3,4,6,7,8,9	-Octa-CDF

	WHO-PCBs		
	Compound		IUPAC Code
Non-ortho PCBs	3,3',4,4'	-Tetra-CB	PCB 77
	3,4,4',5	-Tetra-CB	PCB 81
	3,3',4,4',5	-Penta-CB	PCB 126
	3,3',4,4',5,5'	-Hexa-CB	PCB 169
Mono-ortho PCBs	2,3,3',4,4'	-Penta-CB	PCB 105
	2,3,4,4',5	-Penta-CB	PCB 114
	2,3',4,4',5	-Penta-CB	PCB 118
	2',3,4,4',5	-Penta-CB	PCB 123
	2,3,3',4,4',5	-Hexa-CB	PCB 156
	2,3,3',4,4',5'	-Hexa-CB	PCB 157
	2,3',4,4',5,5'	-Hexa-CB	PCB 167
	2,3,3',4,4',5,5'	-Hepta-CB	PCB 189

In addition to the single results, calculations of the toxicity equivalents (TEQ) according to the NATO/CCMS and the WHO-system are carried out.

5.2 Analytical procedure ("other PCBs" including "Marker"-PCBs)

Within the scope of the investigation, the PCBs 18, 28, 31, 33, 37, 41, 44, 47, 49, 51, 52, 60, 66, 74, 87, 99, 101, 110, 118, 138, 141, 151, 153, 180, 183, 185, 187, 191, 193, 194, 201, 203, 206 and 209 are determined. Before the extraction the following ^{13}C -UL-labeled internal standards are added to the sample:

2,4,4'-Tri-PCB (PCB-28)	^{13}C -UL
2,2',5,5'-Tetra-PCB (PCB-52)	^{13}C -UL
2,2',4,5,5'-Penta-PCB (PCB-101)	^{13}C -UL
2,2',3,4,4',5'-Hexa-PCB (PCB-138)	^{13}C -UL
2,2',4,4',5,5'-Hexa-PCB (PCB-153)	^{13}C -UL
2,2',3,4,4',5,5'-Hepta-PCB (PCB-180)	^{13}C -UL

After the spiking, the samples are extracted with appropriate solvents for ultratrace-analyses (e.g. nanograde). In the following, a column clean up is performed. The measurement is done by means of high resolution gaschromatography and mass spectrometry (HRGC/MS) using DB-5 capillary columns.

For each substance 2 isotope masses are measured. The quantification is carried out with the use of internal/external standard mixtures.

6 Results

You will find the detailed results in the following table (TEQ-value) respectively on the data sheets attached (detail-information). The results are valid for the analyzed samples only.

6.1 Results original wet weight based

Laboratory code	Client code	Matrix	TEQ (WHO) PCDDs/PCDFs in ng/kg, original wet weight based	
			PCDDs/PCDFs	PCDDs/PCDFs and WHO-PCBs
H-01-08-0572	Einstein's DHA capsules X 30 FOS 001/2001	Fish liver oil capsules	0,25	11
H-01-08-0573	Pure Cod Liver Oil capsules X 30 FOS 002/2001	Fish liver oil capsules	7,8	38
H-01-08-0574	Eskimo-3 FOS 003/2001	Fish liver oil capsules	0,44	0,60
H-01-08-0575	Pure Cod Liver Oil capsules X 60 FOS 006/2001	Fish liver oil capsules	3,1	18
H-01-08-0576	Cod Liver Oil Powder FOS 007/2001	Fish liver oil capsules	0,58	2,0
H-01-08-0577	Omega 3 Fish Oil capsules X 90 FOS 008/2001	Fish liver oil capsules	0,65	4,9
H-01-08-0578	Cod Liver Oil capsules X 30 FOS 010/2001	Fish liver oil capsules	2,9	19
H-01-08-0579	Norwegian Cod Liver Oil Capsules X 100 FOS 011/2001	Fish liver oil capsules	11	30
H-01-08-0580	Natural Cod Liver Oil Capsules X 100 FOS 014/2001	Fish liver oil capsules	5,4	23
H-01-08-0581	Cod Liver Oil FOS 015/2001	Fish liver oil capsules	3,8	18

H-01-08-0582	Cod Liver Oil X 30 FOS 016/2001	Fish liver oil capsules	5,1	31
--------------	---------------------------------------	----------------------------	-----	----

Laboratory code	Client code	Matrix	TEQ (WHO) PCDDs/PCDFs in ng/kg, original wet weight based	
			PCDDs/PCDFs	PCDDs/PCDFs and WHO- PCBs
H-01-08-0583	Cod Liver Oil FOS 017/2001	Fish liver oil capsules	2,7	16
H-01-08-0584	One a day pure cod liver oil X 60 FOS 018/2001	Fish liver oil capsules	0,22	6,4
H-01-08-0585	One a day norwegian cod liver oil FOS 019/2001	Fish liver oil capsules	5,7	22
H-01-08-0586	Cod Liver Oil FOS 020/2001	Fish liver oil capsules	3,9	15

7 Final Remarks

It is not allowed to duplicate the report in parts without written permission by ERGO Forschungsgesellschaft mbH.

The samples are stored – on dependence of the test parameters – not longer than three months after the date of the report.

Hamburg, 30.11.2001

ERGO Forschungsgesellschaft mbH

Dr. Michael Ball
board member

Claudia Collingro
(official certified food analyst)
project manager

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland
	Year	2001
	Clients Code	FOS 001/2001
	Sample No. (ERGO)	H-01-08-0572
	Product	
	Tissue	Fish liver oil capsules
	Expression of results	
	Stage of marketing	
	Type of sampling	
	Sample No.	
	Area	
	Number of subsamples	
	Fat content (%)	100

Remarks

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD	0,091	0,045	< LOQ	1,0	0,045
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD	0,13	0,063	< LOQ	1,0	0,063
	Accredited	**	1.2.3.4.7.8-Hexa-CDD	0,18	0,088	< LOQ	0,1	0,0088
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD	0,15	0,076	< LOQ	0,1	0,0076
			1.2.3.7.8.9-Hexa-CDD	0,16	0,078	< LOQ	0,1	0,0078
			1.2.3.4.6.7.8-Hepta-CDD	0,95	0,48	< LOQ	0,01	0,0048
			OCDD			2,9	0,0001	< 0,001
3	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF	0,49	0,25	< LOQ	0,1	0,025
	Accredited	**	1.2.3.7.8-Penta-CDF	0,12	0,062	< LOQ	0,05	0,0031
	Uncertainty (%)		2.3.4.7.8-Penta-CDF	0,10	0,050	< LOQ	0,5	0,025
			1.2.3.4.7.8-Hexa-CDF	0,37	0,18	< LOQ	0,1	0,018
			1.2.3.6.7.8-Hexa-CDF	0,22	0,11	< LOQ	0,1	0,011
			1.2.3.7.8.9-Hexa-CDF	0,29	0,14	< LOQ	0,1	0,014
			2.3.4.6.7.8-Hexa-CDF	0,18	0,090	< LOQ	0,1	0,0090
			1.2.3.4.6.7.8-Hepta-CDF			0,34	0,01	0,0034
			1.2.3.4.7.8.9-Hepta-CDF	0,64	0,32	< LOQ	0,01	0,0032
			OCDF			2,5	0,0001	< 0,001
		Total PCDD				2,9		0,14
		Total PCDF				2,9		0,11
	TEQ (WHO) (PCDDs and PCDFs)				5,8		0,25	

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

**PCB-results in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland								
	Year	2001								
	Clients Code	FOS 001/2001								
	Sample No. (ERGO)	H-01-08-572								
	Product									
	Tissue	Fish liver oil capsules								
	Expression of results									
	Stage of marketing									
	Type of sampling									
	Sample No.									
	Area									
	Number of subsamples									
Fat content (%)	100									
2	non-ortho PCBs (ppt)		PCB congeners		LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB-	77			40	0,0001	0,0040	
	Detection	HRGC/HRMS	PCB-	81			4,6	0,0001	< 0,001	
	Accredited	**	PCB-	126			83	0,1	8,3	
	Uncertainty (%)		PCB-	169			44	0,01	0,44	
3	mono-ortho PCBs (ppt)		PCB congeners		LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB-	105			3535	0,0001	0,35	
	Accredited	**	PCB-	114			254	0,0005	0,13	
	Uncertainty (%)		PCB-	118			10704	0,0001	1,1	
			PCB-	123			n.a.	0,0001	-	
			PCB-	156			1526	0,0005	0,76	
			PCB-	157			350	0,0005	0,18	
			PCB-	167			1243	0,00001	0,012	
			PCB-	189			152	0,0001	0,015	
	Total non-ortho PCB						172		8,7	
	Total mono-ortho PCB						17764		2,5	
	Total WHO-PCB						17936		11	
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)								11	
	4	PCB-7 (6) (ppb)		PCB congeners		LOQ	LOD	Results		
		Methods	*	PCB-	28	1,5	0,75	< LOQ		
		Accredited	**	PCB-	52			2,6		
Uncertainty (%)			PCB-	101			13			
			PCB-	118			11			
			PCB-	138			30			
			PCB-	153			34			
			PCB-	180			13			
5	Other PCBs (ppb)		PCB congeners		LOQ	LOD	Results			
	Methods	*	PCB-	18			0,75			
	Accredited	**	PCB-	31			1,2			
	Uncertainty (%)		PCB-	33			0,50			
			PCB-	37			0,087			
			PCB-	41			1,3			
			PCB-	44			1,1			
			PCB-	47			0,94			
			PCB-	49			1,0			
			PCB-	51			0,060			
			PCB-	60			0,65			
			PCB-	66			2,6			
			PCB-	74			1,4			
			PCB-	87			4,4			
			PCB-	99			6,9			
			PCB-	110			6,3			
			PCB-	141			3,5			
			PCB-	151			5,0			
			PCB-	183			2,3			
			PCB-	185			0,32			
			PCB-	187			6,9			
			PCB-	191			0,072			
			PCB-	193			0,87			
			PCB-	194			0,90			
			PCB-	201			2,3			
			PCB-	203			1,5			
			PCB-	206			0,30			
			PCB-	209			0,052			
	Small differences on totals result from computerroundings									
	* = see report, section "Methods"									
	** = Accreditation in progress									
	(DACH 175/ERGO/20.06.00/00)									

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 002/2001	
	Sample No. (ERGO)	H-01-08-0573	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			1,2	1	1,2
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			1,1	1	1,1
	Accredited	**	1.2.3.4.7.8-Hexa-CDD	0,32	0,16	< LOQ	0,1	0,016
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			2,5	0,1	0,25
			1.2.3.7.8.9-Hexa-CDD			0,27	0,1	0,027
			1.2.3.4.6.7.8-Hepta-CDD			1,8	0,01	0,018
			OCDD			5,1	0,0001	0,00051
3	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			18	0,1	1,8
	Accredited	**	1.2.3.7.8-Penta-CDF			4,8	0,05	0,24
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			5,0	0,5	2,5
			1.2.3.4.7.8-Hexa-CDF			1,8	0,1	0,18
			1.2.3.6.7.8-Hexa-CDF			1,9	0,1	0,19
			1.2.3.7.8.9-Hexa-CDF	0,14	0,070	< LOQ	0,1	0,0070
			2.3.4.6.7.8-Hexa-CDF			1,8	0,1	0,18
			1.2.3.4.6.7.8-Hepta-CDF			0,94	0,01	0,0094
			1.2.3.4.7.8.9-Hepta-CDF	1,2	0,59	< LOQ	0,01	0,0059
			OCDF			2,2	0,0001	< 0,001
	Total PCDD					12		2,6
	Total PCDF					37		5,1
	TEQ (WHO) (PCDDs and PCDFs)					49		7,8

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

PCB-results in Fish liver oil capsules - original wet weight based -

1	Country	Ireland										
	Year	2001										
	Clients Code	FOS 002/2001										
	Sample No. (ERGO)	H-01-08-0573										
	Product											
	Tissue	Fish liver oil capsules										
	Expression of results											
	Stage of marketing											
	Type of sampling											
	Sample No.											
	Area											
	Number of subsamples											
	Fat content (%)	100										
2	non-ortho PCBs (ppt)		PCB congeners		LOQ	LOD	Results	TEF	TEQ			
	Methods	*	PCB-	77			268	0,0001	0,027			
	Detection	HRGC/HRMS	PCB-	81			8,8	0,0001	0,00088			
	Accredited	**	PCB-	126			221	0,1	22			
	Uncertainty (%)		PCB-	169			53	0,01	0,53			
3	mono-ortho PCBs (ppt)		PCB congeners		LOQ	LOD	Results	TEF	TEQ			
	Methods	*	PCB-	105			11339	0,0001	1,1			
	Accredited	**	PCB-	114			674	0,0005	0,34			
	Uncertainty (%)		PCB-	118			29259	0,0001	2,9			
			PCB-	123			n.a.	0,0001	-			
			PCB-	156			4223	0,0005	2,1			
			PCB-	157			965	0,0005	0,48			
			PCB-	167			2386	0,00001	0,024			
			PCB-	189			393	0,0001	0,039			
	Total non-ortho PCB						551		23			
	Total mono-ortho PCB						49239		7,1			
	Total WHO-PCB						49790		30			
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)								38			
4	PCB-7 (6) (ppb)		PCB congeners		LOQ	LOD	Results					
	Methods	*	PCB-	28			1,1					
	Accredited	**	PCB-	52			9,6					
	Uncertainty (%)		PCB-	101			33					
			PCB-	118			29					
			PCB-	138			70					
			PCB-	153			76					
			PCB-	180			20					
			Other PCBs (ppb)		PCB congeners		LOQ	LOD	Results			
	Methods	*	PCB-	18			1,2					
Accredited	**	PCB-	31			3,7						
Uncertainty (%)		PCB-	33			0,82						
5			PCB-	37			0,082					
			PCB-	41			4,1					
			PCB-	44			4,4					
			PCB-	47			2,2					
			PCB-	49			3,1					
			PCB-	51			0,13					
			PCB-	60			2,2					
			PCB-	66			9,0					
			PCB-	74			5,6					
			PCB-	87			11					
			PCB-	99			18					
			PCB-	110			22					
			PCB-	141			6,3					
			PCB-	151			10					
			PCB-	183			4,2					
			PCB-	185			0,35					
			PCB-	187			8,7					
			PCB-	191			0,22					
			PCB-	193			1,2					
			PCB-	194			1,7					
			PCB-	201			2,1					
			PCB-	203			2,0					
			PCB-	206			0,37					
			PCB-	209			0,17					
			Small differences on totals result from computerroundings									
			* = see report, section "Methods"									
			** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)									

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 003/2001	
	Sample No. (ERGO)	H-01-08-0574	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD	0,10	0,050	< LOQ	1,0	0,050
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD	0,14	0,072	< LOQ	1,0	0,072
	Accredited	**	1.2.3.4.7.8-Hexa-CDD	0,42	0,21	< LOQ	0,1	0,021
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			0,58	0,1	0,058
			1.2.3.7.8.9-Hexa-CDD			0,58	0,1	0,058
			1.2.3.4.6.7.8-Hepta-CDD			9,9	0,01	0,099
			OCDD			8,9	0,0001	0,00089
3	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF	0,45	0,23	< LOQ	0,1	0,023
	Accredited	**	1.2.3.7.8-Penta-CDF	0,11	0,053	< LOQ	0,05	0,0026
	Uncertainty (%)		2.3.4.7.8-Penta-CDF	0,10	0,050	< LOQ	0,5	0,025
			1.2.3.4.7.8-Hexa-CDF	0,16	0,079	< LOQ	0,1	0,0079
			1.2.3.6.7.8-Hexa-CDF	0,13	0,063	< LOQ	0,1	0,0063
			1.2.3.7.8.9-Hexa-CDF	0,15	0,075	< LOQ	0,1	0,0075
			2.3.4.6.7.8-Hexa-CDF	0,16	0,080	< LOQ	0,1	0,0080
			1.2.3.4.6.7.8-Hepta-CDF			0,21	0,01	0,0021
			1.2.3.4.7.8.9-Hepta-CDF	0,60	0,30	< LOQ	0,01	0,0030
			OCDF	2,6	1,3	< LOQ	0,0001	< 0,001
	Total PCDD					20		0,36
	Total PCDF					0,21		0,085
	TEQ (WHO) (PCDDs and PCDFs)					20		0,44

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

PCB-results in Fish liver oil - original wet weight based -

1	Country	Ireland									
	Year	2001									
	Clients Code	FOS 003/2001									
	Sample No. (ERGO)	H-01-08-574 II									
	Product										
	Tissue	Fish liver oil									
	Expression of results										
	Stage of marketing										
	Type of sampling										
	Sample No.										
	Area										
	Number of subsamples										
Fat content (%)	100										
2	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ			
	Methods	*	PCB-	77	17	8,4	< LOQ	0,0001	0,00084		
	Detection	HRGC/HRMS	PCB-	81	0,83	0,42	< LOQ	0,0001	< 0,001		
	Accredited	**	PCB-	126	2,7	1,3	< LOQ	0,1	0,13		
	Uncertainty (%)		PCB-	169	0,29	0,14	< LOQ	0,01	0,0014		
3	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ			
	Methods	*	PCB-	105	65	33	< LOQ	0,0001	0,0033		
	Accredited	**	PCB-	114	14	6,9	< LOQ	0,0005	0,0034		
	Uncertainty (%)		PCB-	118	151	76	< LOQ	0,0001	0,0076		
			PCB-	123			n.a.	0,0001	-		
			PCB-	156	30	15	< LOQ	0,0005	0,0075		
			PCB-	157	10	5,2	< LOQ	0,0005	0,0026		
			PCB-	167	23	12	< LOQ	0,00001	< 0,001		
			PCB-	189	12	6,2	< LOQ	0,0001	0,00062		
	Total non-ortho PCB						< LOQ		0,14		
Total mono-ortho PCB						< LOQ		0,025			
Total WHO-PCB						< LOQ		0,16			
TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)								0,6			
4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results					
	Methods	*	PCB-	28	1,1	0,57	< LOQ				
	Accredited	**	PCB-	52	0,25	0,13	< LOQ				
	Uncertainty (%)		PCB-	101	0,30	0,15	< LOQ				
			PCB-	118	0,15	0,076	< LOQ				
			PCB-	138	0,34	0,17	< LOQ				
			PCB-	153	0,63	0,32	< LOQ				
			PCB-	180	0,092	0,046	< LOQ				
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results					
	Methods	*	PCB-	18	1,5	0,75	< LOQ				
	Accredited	**	PCB-	31	0,87	0,44	< LOQ				
	Uncertainty (%)		PCB-	33	0,80	0,40	< LOQ				
			PCB-	37	0,11	0,057	< LOQ				
			PCB-	41	0,22	0,11	< LOQ				
			PCB-	44	0,16	0,078	< LOQ				
			PCB-	47	0,32	0,16	< LOQ				
			PCB-	49	0,13	0,066	< LOQ				
			PCB-	51	0,079	0,040	< LOQ				
			PCB-	60			0,042				
			PCB-	66	0,18	0,090	< LOQ				
			PCB-	74	0,14	0,070	< LOQ				
			PCB-	87	0,085	0,042	< LOQ				
			PCB-	99	0,086	0,043	< LOQ				
			PCB-	110	0,18	0,091	< LOQ				
			PCB-	141	0,087	0,043	< LOQ				
			PCB-	151	0,11	0,055	< LOQ				
			PCB-	183	0,027	0,014	< LOQ				
			PCB-	185			0,0070				
			PCB-	187	0,037	0,018	< LOQ				
			PCB-	191	0,0093	0,0047	< LOQ				
			PCB-	193	0,010	0,0051	< LOQ				
			PCB-	194	0,024	0,012	< LOQ				
			PCB-	201	0,024	0,012	< LOQ				
			PCB-	203	0,021	0,010	< LOQ				
			PCB-	206	0,035	0,018	< LOQ				
			PCB-	209	0,024	0,012	< LOQ				
			Small differences on totals result from computerroundings								
			* = see report, section "Methods"								
	** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)										

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 006/2001	
	Sample No. (ERGO)	H-01-08-0575	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			0,50	1,0	0,50
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			0,62	1,0	0,62
	Accredited	**	1.2.3.4.7.8-Hexa-CDD	0,17	0,086	< LOQ	0,1	0,0086
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			0,79	0,1	0,079
			1.2.3.7.8.9-Hexa-CDD			0,18	0,1	0,018
			1.2.3.4.6.7.8-Hepta-CDD			1,4	0,01	0,014
			OCDD			6,3	0,0001	0,00063
	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			9,4	0,1	0,94
3	Accredited	**	1.2.3.7.8-Penta-CDF			1,3	0,05	0,065
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			1,5	0,5	0,77
			1.2.3.4.7.8-Hexa-CDF			0,33	0,1	0,033
			1.2.3.6.7.8-Hexa-CDF			0,32	0,1	0,032
			1.2.3.7.8.9-Hexa-CDF	0,080	0,040	< LOQ	0,1	0,0040
			2.3.4.6.7.8-Hexa-CDF			0,43	0,1	0,043
			1.2.3.4.6.7.8-Hepta-CDF			0,19	0,01	0,0019
			1.2.3.4.7.8.9-Hepta-CDF	0,34	0,17	< LOQ	0,01	0,0017
			OCDF	2,8	1,4	< LOQ	0,0001	< 0,001
	Total PCDD					9,9		1,2
	Total PCDF					14		1,9
	TEQ (WHO) (PCDDs and PCDFs)					23		3,1

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

**PCB-results in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland							
	Year	2001							
	Clients Code	FOS 006/2001							
	Sample No. (ERGO)	H-01-08-575 II							
	Product								
	Tissue	Fish liver oil capsules							
	Expression of results								
	Stage of marketing								
	Type of sampling								
	Sample No.								
	Area								
	Number of subsamples								
	Fat content (%)	100							
2	non-ortho PCBs (ppt)		PCB congeners		LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB-	77			303	0,0001	0,030
	Detection	HRGC/HRMS	PCB-	81			5,6	0,0001	0,00056
	Accredited	**	PCB-	126			114	0,1	11
	Uncertainty (%)		PCB-	169			14	0,01	0,14
3	mono-ortho PCBs (ppt)		PCB congeners		LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB-	105			6614	0,0001	0,66
	Accredited	**	PCB-	114			356	0,0005	0,18
	Uncertainty (%)		PCB-	118			16436	0,0001	1,6
			PCB-	123			n.a.	0,0001	-
			PCB-	156			1683	0,0005	0,84
			PCB-	157			499	0,0005	0,25
			PCB-	167			832	0,00001	0,0083
			PCB-	189			161	0,0001	0,016
	Total non-ortho PCB						437		12
	Total mono-ortho PCB						26580		3,6
	Total WHO-PCB						27017		15
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)								18
4	PCB-7 (6) (ppb)		PCB congeners		LOQ	LOD	Results		
	Methods	*	PCB-	28			1,7		
	Accredited	**	PCB-	52			7,0		
	Uncertainty (%)		PCB-	101			17		
			PCB-	118			16		
			PCB-	138			37		
			PCB-	153			40		
			PCB-	180			10		
5	Other PCBs (ppb)		PCB congeners		LOQ	LOD	Results		
	Methods	*	PCB-	18			0,93		
	Accredited	**	PCB-	31			1,4		
	Uncertainty (%)		PCB-	33	0,86	0,43	< LOQ		
			PCB-	37	0,12	0,062	< LOQ		
			PCB-	41			1,9		
			PCB-	44			2,5		
			PCB-	47			1,8		
			PCB-	49			1,9		
			PCB-	51			0,049		
			PCB-	60			1,9		
			PCB-	66			4,9		
			PCB-	74			5,2		
			PCB-	87			6,1		
			PCB-	99			14		
			PCB-	110			9,0		
			PCB-	141			2,6		
			PCB-	151			4,1		
			PCB-	183			1,7		
			PCB-	185			0,13		
			PCB-	187			4,3		
			PCB-	191			0,11		
			PCB-	193			0,61		
			PCB-	194			0,83		
			PCB-	201			0,96		
			PCB-	203			0,83		
			PCB-	206			0,16		
			PCB-	209			0,095		

Small differences on totals result from computerroundings
* = see report, section "Methods"
** = Accreditation in progress
(DACH 175/ERGO/20.06.00/00)

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 007/2001	
	Sample No. (ERGO)	H-01-08-0576	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			0,052	1,0	0,052
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			0,12	1,0	0,12
	Accredited	**	1.2.3.4.7.8-Hexa-CDD			0,12	0,1	0,012
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			0,22	0,1	0,022
			1.2.3.7.8.9-Hexa-CDD			0,29	0,1	0,029
			1.2.3.4.6.7.8-Hepta-CDD			4,5	0,01	0,045
			OCDD			3,5	0,0001	< 0,001
3	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			1,2	0,1	0,12
	Accredited	**	1.2.3.7.8-Penta-CDF			0,15	0,05	0,0077
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			0,30	0,5	0,15
			1.2.3.4.7.8-Hexa-CDF			0,060	0,1	0,0060
			1.2.3.6.7.8-Hexa-CDF			0,038	0,1	0,0038
			1.2.3.7.8.9-Hexa-CDF	0,060	0,030	< LOQ	0,1	0,0030
			2.3.4.6.7.8-Hexa-CDF			0,049	0,1	0,0049
			1.2.3.4.6.7.8-Hepta-CDF			0,18	0,01	0,0018
			1.2.3.4.7.8.9-Hepta-CDF			0,052	0,01	0,00052
			OCDF	0,46	0,23	< LOQ	0,0001	< 0,001
	Total PCDD					8,7		0,28
	Total PCDF					2,0		0,30
	TEQ (WHO) (PCDDs and PCDFs)					11		0,58

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

PCB-results in Fish liver oil powder - original wet weight based -

1	Country	Ireland								
	Year	2001								
	Clients Code	FOS 007/2001								
	Sample No. (ERGO)	H-01-08-576								
	Product									
	Tissue	Fish liver oil powder								
	Expression of results									
	Stage of marketing									
	Type of sampling									
	Sample No.									
	Area									
	Number of subsamples									
	Fat content (%)	100								
2	non-ortho PCBs (ppt)		PCB congeners		LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB-	77			28	0,0001	0,0028	
	Detection	HRGC/HRMS	PCB-	81			0,74	0,0001	< 0,001	
	Accredited	**	PCB-	126			10	0,1	1,0	
	Uncertainty (%)		PCB-	169			1,7	0,01	0,017	
3	mono-ortho PCBs (ppt)		PCB congeners		LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB-	105			520	0,0001	0,052	
	Accredited	**	PCB-	114			28	0,0005	0,014	
	Uncertainty (%)		PCB-	118			1383	0,0001	0,14	
			PCB-	123			n.a.	0,0001	-	
			PCB-	156			166	0,0005	0,083	
			PCB-	157			45	0,0005	0,022	
			PCB-	167			90	0,00001	0,00090	
			PCB-	189			14	0,0001	0,0014	
			Total non-ortho PCB						41	
Total mono-ortho PCB						2246		0,31		
Total WHO-PCB						2287		1,4		
TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)								2,0		
4	PCB-7 (6) (ppb)		PCB congeners		LOQ	LOD	Results			
	Methods	*	PCB-	28	0,18	0,092	< LOQ			
	Accredited	**	PCB-	52			0,32			
	Uncertainty (%)		PCB-	101			0,77			
			PCB-	118			1,4			
			PCB-	138			1,7			
			PCB-	153			1,6			
			PCB-	180			0,45			
5			Other PCBs (ppb)		PCB congeners		LOQ	LOD	Results	
	Methods	*	PCB-	18	0,24	0,12	< LOQ			
	Accredited	**	PCB-	31	0,14	0,071	< LOQ			
	Uncertainty (%)		PCB-	33	0,13	0,065	< LOQ			
			PCB-	37	0,019	0,0093	< LOQ			
			PCB-	41			0,12			
			PCB-	44			0,13			
			PCB-	47			0,095			
			PCB-	49			0,100			
			PCB-	51	0,013	0,0064	< LOQ			
			PCB-	60			0,11			
			PCB-	66			0,22			
			PCB-	74			0,20			
			PCB-	87			0,61			
			PCB-	99			0,45			
			PCB-	110			1,2			
			PCB-	141			0,089			
			PCB-	151			0,19			
			PCB-	183			0,082			
			PCB-	185			0,0089			
			PCB-	187			0,23			
			PCB-	191			0,0062			
			PCB-	193			0,041			
			PCB-	194			0,096			
			PCB-	201			0,088			
			PCB-	203			0,085			
			PCB-	206			0,021			
			PCB-	209			0,012			
	Small differences on totals result from computer roundings									
	* = see report, section "Methods"									
	** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)									

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland
	Year	2001
	Clients Code	FOS 008/2001
	Sample No. (ERGO)	H-01-08-0577
	Product	
	Tissue	Fish liver oil capsules
	Expression of results	
	Stage of marketing	
	Type of sampling	
	Sample No.	
	Area	
	Number of subsamples	
	Fat content (%)	100

Remarks

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD	0,13	0,065	< LOQ	1,0	0,065
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			0,14	1,0	0,14
	Accredited	**	1.2.3.4.7.8-Hexa-CDD	0,17	0,084	< LOQ	0,1	0,0084
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD	0,14	0,068	< LOQ	0,1	0,0068
			1.2.3.7.8.9-Hexa-CDD	0,14	0,068	< LOQ	0,1	0,0068
			1.2.3.4.6.7.8-Hepta-CDD	0,58	0,29	< LOQ	0,01	0,0029
			OCDD			3,8	0,0001	< 0,001
3	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			2,0	0,1	0,20
	Accredited	**	1.2.3.7.8-Penta-CDF			0,18	0,05	0,0091
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			0,34	0,5	0,17
			1.2.3.4.7.8-Hexa-CDF	0,11	0,053	< LOQ	0,1	0,0053
			1.2.3.6.7.8-Hexa-CDF	0,091	0,045	< LOQ	0,1	0,0045
			1.2.3.7.8.9-Hexa-CDF	0,18	0,090	< LOQ	0,1	0,0090
			2.3.4.6.7.8-Hexa-CDF	0,18	0,090	< LOQ	0,1	0,0090
			1.2.3.4.6.7.8-Hepta-CDF	0,26	0,13	< LOQ	0,01	0,0013
			1.2.3.4.7.8.9-Hepta-CDF	0,51	0,25	< LOQ	0,01	0,0025
			OCDF	2,7	1,4	< LOQ	0,0001	< 0,001
		Total PCDD				4,0		0,23
	Total PCDF				2,5		0,41	
	TEQ (WHO) (PCDDs and PCDFs)				6,5		0,65	

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

**PCB-results in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland							
	Year	2001							
	Clients Code	FOS 008/2001							
	Sample No. (ERGO)	H-01-08-577 II							
	Product								
	Tissue	Fish liver oil capsules							
	Expression of results								
	Stage of marketing								
	Type of sampling								
	Sample No.								
	Area								
	Number of subsamples								
	Fat content (%)	100							
2	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB-	77		99	0,0001	0,0099	
	Detection	HRGC/HRMS	PCB-	81		2,1	0,0001	< 0,001	
	Accredited	**	PCB-	126		35	0,1	3,5	
	Uncertainty (%)		PCB-	169		4,1	0,01	0,041	
3	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB-	105		1204	0,0001	0,12	
	Accredited	**	PCB-	114		49	0,0005	0,024	
	Uncertainty (%)		PCB-	118		2986	0,0001	0,30	
			PCB-	123		n.a.	0,0001	-	
			PCB-	156		329	0,0005	0,16	
			PCB-	157		85	0,0005	0,043	
			PCB-	167		247	0,00001	0,0025	
			PCB-	189		30	0,0001	0,0030	
	Total non-ortho PCB					140		3,6	
	Total mono-ortho PCB					4930		0,66	
	Total WHO-PCB					5070		4,2	
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							4,9	
	4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
		Methods	*	PCB-	28		0,59		
		Accredited	**	PCB-	52		1,3		
Uncertainty (%)			PCB-	101		2,4			
			PCB-	118		3,0			
			PCB-	138		8,0			
			PCB-	153		11			
			PCB-	180		3,1			
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results			
	Methods	*	PCB-	18	1,6	0,78	< LOQ		
	Accredited	**	PCB-	31	0,90	0,45	< LOQ		
	Uncertainty (%)		PCB-	33	0,83	0,41	< LOQ		
			PCB-	37			0,10		
			PCB-	41			0,50		
			PCB-	44			0,68		
			PCB-	47			0,44		
			PCB-	49			0,36		
			PCB-	51			0,056		
			PCB-	60			0,43		
			PCB-	66			1,1		
			PCB-	74			0,61		
			PCB-	87			1,1		
			PCB-	99			1,9		
			PCB-	110			2,1		
			PCB-	141			0,65		
			PCB-	151			1,6		
			PCB-	183			0,49		
			PCB-	185			0,064		
			PCB-	187			1,5		
			PCB-	191			0,035		
			PCB-	193			0,20		
			PCB-	194			0,29		
			PCB-	201			0,28		
			PCB-	203			0,24		
			PCB-	206			0,028		
			PCB-	209			0,026		
	Small differences on totals result from computerroundings								
	* = see report, section "Methods"								
	** = Accreditation in progress								
	(DACH 175/ERGO/20.06.00/00)								

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 010/2001	
	Sample No. (ERGO)	H-01-08-0578	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			0,38	1,0	0,38
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			0,64	1,0	0,64
	Accredited	**	1.2.3.4.7.8-Hexa-CDD	0,16	0,078	< LOQ	0,1	0,0078
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			0,51	0,1	0,051
			1.2.3.7.8.9-Hexa-CDD	0,20	0,100	< LOQ	0,1	0,0100
			1.2.3.4.6.7.8-Hepta-CDD			0,74	0,01	0,0074
			OCDD			3,9	0,0001	< 0,001
	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			7,3	0,1	0,73
3	Accredited	**	1.2.3.7.8-Penta-CDF			1,1	0,05	0,055
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			1,8	0,5	0,90
			1.2.3.4.7.8-Hexa-CDF			0,28	0,1	0,028
			1.2.3.6.7.8-Hexa-CDF			0,28	0,1	0,028
			1.2.3.7.8.9-Hexa-CDF	0,17	0,087	< LOQ	0,1	0,0087
			2.3.4.6.7.8-Hexa-CDF			0,29	0,1	0,029
			1.2.3.4.6.7.8-Hepta-CDF	0,25	0,12	< LOQ	0,01	0,0012
			1.2.3.4.7.8.9-Hepta-CDF	1,1	0,53	< LOQ	0,01	0,0053
			OCDF	2,8	1,4	< LOQ	0,0001	< 0,001
	Total PCDD					6,2		1,1
	Total PCDF					11		1,8
	TEQ (WHO) (PCDDs and PCDFs)					17		2,9

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

PCB-results in Fish liver oil capsules - original wet weight based -

1	Country	Ireland						
	Year	2001						
	Clients Code	FOS 010/2001						
	Sample No. (ERGO)	H-01-08-578 II						
	Product							
	Tissue	Fish liver oil capsules						
	Expression of results							
	Stage of marketing							
	Type of sampling							
	Sample No.							
	Area							
	Number of subsamples							
	Fat content (%)	100						
2	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 77			357	0,0001	0,036
	Detection	HRGC/HRMS	PCB- 81			5,0	0,0001	0,00050
	Accredited	**	PCB- 126			120	0,1	12
	Uncertainty (%)		PCB- 169			15	0,01	0,15
3	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 105			6879	0,0001	0,69
	Accredited	**	PCB- 114			306	0,0005	0,15
	Uncertainty (%)		PCB- 118			15357	0,0001	1,5
			PCB- 123			n.a.	0,0001	-
			PCB- 156			1883	0,0005	0,94
			PCB- 157			497	0,0005	0,25
			PCB- 167			803	0,00001	0,0080
			PCB- 189			149	0,0001	0,015
	Total non-ortho PCB					497		12
	Total mono-ortho PCB					25874		3,6
	Total WHO-PCB					26371		16
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							19
4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 28			1,4		
	Accredited	**	PCB- 52			5,7		
	Uncertainty (%)		PCB- 101			16		
			PCB- 118			15		
			PCB- 138			37		
			PCB- 153			41		
			PCB- 180			9,8		
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 18	1,6	0,81	< LOQ		
	Accredited	**	PCB- 31			0,84		
	Uncertainty (%)		PCB- 33	0,86	0,43	< LOQ		
			PCB- 37	0,12	0,062	< LOQ		
			PCB- 41			1,6		
			PCB- 44			1,8		
			PCB- 47			1,5		
			PCB- 49			1,6		
			PCB- 51	0,085	0,043	< LOQ		
			PCB- 60			1,8		
			PCB- 66			4,5		
			PCB- 74			4,8		
			PCB- 87			5,0		
			PCB- 99			13		
			PCB- 110			9,0		
			PCB- 141			2,5		
			PCB- 151			4,0		
			PCB- 183			1,8		
			PCB- 185			0,14		
			PCB- 187			4,1		
			PCB- 191			0,12		
			PCB- 193			0,67		
			PCB- 194			0,81		
			PCB- 201			0,91		
			PCB- 203			0,81		
			PCB- 206			0,13		
			PCB- 209			0,057		
	Small differences on totals result from computerroundings							
	* = see report, section "Methods"							
	** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)							

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 011/2001	
	Sample No. (ERGO)	H-01-08-0579	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			1,0	1,0	1,0
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			2,1	1,0	2,1
	Accredited	**	1.2.3.4.7.8-Hexa-CDD			0,35	0,1	0,035
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			1,8	0,1	0,18
			1.2.3.7.8.9-Hexa-CDD			0,29	0,1	0,029
			1.2.3.4.6.7.8-Hepta-CDD			2,1	0,01	0,021
			OCDD			6,7	0,0001	0,00067
	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			22	0,1	2,2
3	Accredited	**	1.2.3.7.8-Penta-CDF			3,9	0,05	0,19
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			9,5	0,5	4,7
			1.2.3.4.7.8-Hexa-CDF			1,5	0,1	0,15
			1.2.3.6.7.8-Hexa-CDF			1,3	0,1	0,13
			1.2.3.7.8.9-Hexa-CDF	0,27	0,14	< LOQ	0,1	0,014
			2.3.4.6.7.8-Hexa-CDF			1,4	0,1	0,14
			1.2.3.4.6.7.8-Hepta-CDF			0,98	0,01	0,0098
			1.2.3.4.7.8.9-Hepta-CDF	0,78	0,39	< LOQ	0,01	0,0039
			OCDF			3,7	0,0001	< 0,001
	Total PCDD					14		3,4
	Total PCDF					44		7,6
	TEQ (WHO) (PCDDs and PCDFs)					59		11

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

PCB-results in Fish liver oil softgels
- original wet weight based -

1	Country	Ireland						
	Year	2001						
	Clients Code	FOS 011/2001						
	Sample No. (ERGO)	H-01-08-0579 II						
	Product							
	Tissue	Fish liver oil softgels						
	Expression of results							
	Stage of marketing							
	Type of sampling							
	Sample No.							
	Area							
	Number of subsamples							
	Fat content (%)	100						
2	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 77			389	0.0001	0.039
	Detection	HRGC/HRMS	PCB- 81			9.0	0.0001	0.00090
	Accredited	**	PCB- 126			150	0.1	15
	Uncertainty (%)		PCB- 169			29	0.01	0.29
3	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 105			6920	0.0001	0.69
	Accredited	**	PCB- 114			356	0.0005	0.18
	Uncertainty (%)		PCB- 118			17024	0.0001	1.7
			PCB- 123			n.a.	0.0001	-
			PCB- 156			2254	0.0005	1.1
			PCB- 157			588	0.0005	0.29
			PCB- 167			1415	0.00001	0.014
			PCB- 189			229	0.0001	0.023
	Total non-ortho PCB					577		15
	Total mono-ortho PCB					28786		4.0
	Total WHO-PCB					29363		19
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							30
4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 28			1.2		
	Accredited	**	PCB- 52			7.4		
	Uncertainty (%)		PCB- 101			23		
			PCB- 118			17		
			PCB- 138			43		
			PCB- 153			42		
			PCB- 180			10		
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 18			1.7		
	Accredited	**	PCB- 31			2.7		
	Uncertainty (%)		PCB- 33			0.85		
			PCB- 37			0.094		
			PCB- 41			3.3		
			PCB- 44			3.7		
			PCB- 47			1.8		
			PCB- 49			2.4		
			PCB- 51			0.11		
			PCB- 60			1.4		
			PCB- 66			6.7		
			PCB- 74			4.2		
			PCB- 87			7.6		
			PCB- 99			11		
			PCB- 110			17		
			PCB- 141			3.7		
			PCB- 151			6.7		
			PCB- 183			2.2		
			PCB- 185			0.23		
			PCB- 187			5.8		
			PCB- 191			0.11		
			PCB- 193			0.60		
			PCB- 194			0.97		
			PCB- 201			1.2		
			PCB- 203			1.2		
	Small differences on totals result from computer roundings							
	* = see report, section "Methods"							

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 014/2001	
	Sample No. (ERGO)	H-01-08-0580	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			0,58	1,0	0,58
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			1,4	1,0	1,4
	Accredited	**	1.2.3.4.7.8-Hexa-CDD			0,31	0,1	0,031
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			1,3	0,1	0,13
			1.2.3.7.8.9-Hexa-CDD	0,26	0,13	< LOQ	0,1	0,013
			1.2.3.4.6.7.8-Hepta-CDD			1,0	0,01	0,010
			OCDD			1,4	0,0001	< 0,001
	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			11	0,1	1,1
3	Accredited	**	1.2.3.7.8-Penta-CDF			1,5	0,05	0,075
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			3,6	0,5	1,8
			1.2.3.4.7.8-Hexa-CDF			0,56	0,1	0,056
			1.2.3.6.7.8-Hexa-CDF			0,55	0,1	0,055
			1.2.3.7.8.9-Hexa-CDF	0,27	0,13	< LOQ	0,1	0,013
			2.3.4.6.7.8-Hexa-CDF			0,49	0,1	0,049
			1.2.3.4.6.7.8-Hepta-CDF			0,29	0,01	0,0029
			1.2.3.4.7.8.9-Hepta-CDF	0,70	0,35	< LOQ	0,01	0,0035
			OCDF	2,8	1,4	< LOQ	0,0001	< 0,001
	Total PCDD					5,9		2,2
	Total PCDF					18		3,2
	TEQ (WHO) (PCDDs and PCDFs)					24		5,4

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

PCB-results in Fish liver oil capsules **- original wet weight based -**

1	Country	Ireland						
	Year	2001						
	Clients Code	FOS 014/2001						
	Sample No. (ERGO)	H-01-08-580 II						
	Product							
	Tissue	Fish liver oil capsules						
	Expression of results							
	Stage of marketing							
	Type of sampling							
	Sample No.							
2	Area							
	Number of subsamples							
	Fat content (%)	100						
	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 77			162	0,0001	0,016
	Detection	HRGC/HRMS	PCB- 81			4,9	0,0001	< 0,001
	Accredited	**	PCB- 126			111	0,1	11
	Uncertainty (%)		PCB- 169			32	0,01	0,32
	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 105			6883	0,0001	0,69
3	Accredited	**	PCB- 114			462	0,0005	0,23
	Uncertainty (%)		PCB- 118			24065	0,0001	2,4
			PCB- 123			n.a.	0,0001	-
			PCB- 156			4137	0,0005	2,1
			PCB- 157			1368	0,0005	0,68
			PCB- 167			876	0,00001	0,0088
			PCB- 189			594	0,0001	0,059
	Total non-ortho PCB					310		11
	Total mono-ortho PCB					38386		6,1
	Total WHO-PCB					38696		18
4	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							23
	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 28			2,8		
	Accredited	**	PCB- 52			15		
	Uncertainty (%)		PCB- 101			26		
			PCB- 118			24		
			PCB- 138			126		
			PCB- 153			161		
			PCB- 180			40		
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 18			1,5		
	Accredited	**	PCB- 31			3,5		
	Uncertainty (%)		PCB- 33			0,82		
			PCB- 37			0,065		
			PCB- 41			2,8		
			PCB- 44			3,7		
			PCB- 47			4,7		
			PCB- 49			3,6		
			PCB- 51			0,042		
			PCB- 60			2,3		
			PCB- 66			4,8		
			PCB- 74			9,7		
			PCB- 87			8,0		
			PCB- 99			44		
			PCB- 110			11		
			PCB- 141			2,8		
			PCB- 151			4,7		
			PCB- 183			4,9		
			PCB- 185			0,10		
			PCB- 187			11		
			PCB- 191			0,28		
			PCB- 193			2,6		
			PCB- 194			4,8		
			PCB- 201			4,9		
			PCB- 203			3,4		
			PCB- 206			0,65		
			PCB- 209			0,23		

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 015/2001	
	Sample No. (ERGO)	H-01-08-0581	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)	PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD		0,53	1,0	0,53
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD		0,84	1,0	0,84
	Accredited	**	1.2.3.4.7.8-Hexa-CDD		0,087	0,1	0,0087
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD		0,42	0,1	0,042
			1.2.3.7.8.9-Hexa-CDD	0,26	0,13	< LOQ	0,013
			1.2.3.4.6.7.8-Hepta-CDD		0,48	0,01	0,0048
			OCDD	2,4	1,2	< LOQ	0,0001
3	PCDFs (ppt)	PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF		11	0,1	1,1
	Accredited	**	1.2.3.7.8-Penta-CDF		1,3	0,05	0,066
	Uncertainty (%)		2.3.4.7.8-Penta-CDF		2,3	0,5	1,1
			1.2.3.4.7.8-Hexa-CDF		0,26	0,1	0,026
			1.2.3.6.7.8-Hexa-CDF		0,23	0,1	0,023
			1.2.3.7.8.9-Hexa-CDF	0,19	0,096	< LOQ	0,0096
			2.3.4.6.7.8-Hexa-CDF		0,24	0,1	0,024
			1.2.3.4.6.7.8-Hepta-CDF	0,25	0,13	< LOQ	0,0013
			1.2.3.4.7.8.9-Hepta-CDF	0,54	0,27	< LOQ	0,0027
			OCDF	2,7	1,3	< LOQ	0,0001
	Total PCDD				2,4		1,4
	Total PCDF				16		2,4
	TEQ (WHO) (PCDDs and PCDFs)				18		3,8

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

**PCB-results in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland						
	Year	2001						
	Clients Code	FOS 015/2001						
	Sample No. (ERGO)	H-01-08-581 II						
	Product							
	Tissue	Fish liver oil capsules						
	Expression of results							
	Stage of marketing							
	Type of sampling							
	Sample No.							
2	Area							
	Number of subsamples							
	Fat content (%)	100						
	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 77			344	0,0001	0,034
	Detection	HRGC/HRMS	PCB- 81			6,5	0,0001	0,00065
	Accredited	**	PCB- 126			106	0,1	11
	Uncertainty (%)		PCB- 169			13	0,01	0,13
	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 105			6158	0,0001	0,62
3	Accredited	**	PCB- 114			324	0,0005	0,16
	Uncertainty (%)		PCB- 118			14548	0,0001	1,5
			PCB- 123			n.a.	0,0001	-
			PCB- 156			1547	0,0005	0,77
			PCB- 157			399	0,0005	0,20
			PCB- 167			788	0,00001	0,0079
			PCB- 189			121	0,0001	0,012
	Total non-ortho PCB					470		11
	Total mono-ortho PCB					23885		3,2
	Total WHO-PCB					24355		14
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							18
4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 28			1,8		
	Accredited	**	PCB- 52			6,5		
	Uncertainty (%)		PCB- 101			16		
			PCB- 118			15		
			PCB- 138			32		
			PCB- 153			29		
			PCB- 180			7,0		
	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 18			0,99		
5	Accredited	**	PCB- 31			1,5		
	Uncertainty (%)		PCB- 33			0,54		
			PCB- 37	0,12	0,058	< LOQ		
			PCB- 41			2,1		
			PCB- 44			2,7		
			PCB- 47			1,3		
			PCB- 49			1,9		
			PCB- 51			0,072		
			PCB- 60			2,7		
			PCB- 66			6,1		
			PCB- 74			5,2		
			PCB- 87			5,2		
			PCB- 99			9,4		
			PCB- 110			9,1		
			PCB- 141			2,5		
			PCB- 151			4,2		
			PCB- 183			1,3		
			PCB- 185			0,14		
			PCB- 187			3,4		
			PCB- 191			0,087		
			PCB- 193			0,42		
			PCB- 194			0,53		
			PCB- 201			0,65		
			PCB- 203			0,60		
			PCB- 206			0,091		
			PCB- 209			0,043		

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 016/2001	
	Sample No. (ERGO)	H-01-08-0582	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			0,86	1,0	0,86
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			0,81	1,0	0,81
	Accredited	**	1.2.3.4.7.8-Hexa-CDD	0,16	0,082	< LOQ	0,1	0,0082
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			1,2	0,1	0,12
			1.2.3.7.8.9-Hexa-CDD			0,21	0,1	0,021
			1.2.3.4.6.7.8-Hepta-CDD			0,46	0,01	0,0046
			OCDD	2,6	1,3	< LOQ	0,0001	< 0,001
3	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			13	0,1	1,3
	Accredited	**	1.2.3.7.8-Penta-CDF			3,0	0,05	0,15
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			3,0	0,5	1,5
			1.2.3.4.7.8-Hexa-CDF			0,78	0,1	0,078
			1.2.3.6.7.8-Hexa-CDF			0,99	0,1	0,099
			1.2.3.7.8.9-Hexa-CDF	0,19	0,095	< LOQ	0,1	0,0095
			2.3.4.6.7.8-Hexa-CDF			0,74	0,1	0,074
			1.2.3.4.6.7.8-Hepta-CDF			0,20	0,01	0,0020
			1.2.3.4.7.8.9-Hepta-CDF	0,46	0,23	< LOQ	0,01	0,0023
			OCDF	2,9	1,4	< LOQ	0,0001	< 0,001
	Total PCDD					3,5		1,8
	Total PCDF					22		3,3
	TEQ (WHO) (PCDDs and PCDFs)					26		5,1

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

**PCB-results in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland						
	Year	2001						
	Clients Code	FOS 016/2001						
	Sample No. (ERGO)	H-01-08-582 II						
	Product							
	Tissue	Fish liver oil capsules						
	Expression of results							
	Stage of marketing							
	Type of sampling							
	Sample No.							
2	Area							
	Number of subsamples							
	Fat content (%)	100						
	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 77			534	0,0001	0,053
	Detection	HRGC/HRMS	PCB- 81			10	0,0001	0,0010
	Accredited	**	PCB- 126			201	0,1	20
	Uncertainty (%)		PCB- 169			31	0,01	0,31
	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 105			9442	0,0001	0,94
3	Accredited	**	PCB- 114			545	0,0005	0,27
	Uncertainty (%)		PCB- 118			23297	0,0001	2,3
			PCB- 123			n.a.	0,0001	-
			PCB- 156			3280	0,0005	1,6
			PCB- 157			789	0,0005	0,39
			PCB- 167			1856	0,00001	0,019
			PCB- 189			226	0,0001	0,023
	Total non-ortho PCB					776		20
	Total mono-ortho PCB					39435		5,6
	Total WHO-PCB					40211		26
4	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							31
	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 28			2,5		
	Accredited	**	PCB- 52			7,2		
	Uncertainty (%)		PCB- 101			24		
			PCB- 118			23		
			PCB- 138			48		
			PCB- 153			51		
			PCB- 180			13		
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 18			1,3		
	Accredited	**	PCB- 31			1,4		
	Uncertainty (%)		PCB- 33			0,58		
			PCB- 37	0,12	0,062	< LOQ		
			PCB- 41			2,8		
			PCB- 44			3,5		
			PCB- 47			1,5		
			PCB- 49			2,3		
			PCB- 51			0,084		
			PCB- 60			2,9		
			PCB- 66			7,9		
			PCB- 74			5,3		
			PCB- 87			8,5		
			PCB- 99			12		
			PCB- 110			17		
			PCB- 141			4,5		
			PCB- 151			7,3		
			PCB- 183			3,0		
			PCB- 185			0,26		
			PCB- 187			5,9		
			PCB- 191			0,16		
			PCB- 193			0,75		
			PCB- 194			1,1		
			PCB- 201			1,2		
			PCB- 203			1,2		
			PCB- 206			0,21		
			PCB- 209			0,11		

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 017/2001	
	Sample No. (ERGO)	H-01-08-0583	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			0,28	1,0	0,28
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			0,59	1,0	0,59
	Accredited	**	1.2.3.4.7.8-Hexa-CDD			0,092	0,1	0,0092
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			0,38	0,1	0,038
			1.2.3.7.8.9-Hexa-CDD			0,085	0,1	0,0085
			1.2.3.4.6.7.8-Hepta-CDD			0,55	0,01	0,0055
			OCDD			3,5	0,0001	< 0,001
	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			8,7	0,1	0,87
3	Accredited	**	1.2.3.7.8-Penta-CDF			0,95	0,05	0,048
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			1,6	0,5	0,79
			1.2.3.4.7.8-Hexa-CDF			0,25	0,1	0,025
			1.2.3.6.7.8-Hexa-CDF			0,20	0,1	0,020
			1.2.3.7.8.9-Hexa-CDF	0,060	0,030	< LOQ	0,1	0,0030
			2.3.4.6.7.8-Hexa-CDF			0,20	0,1	0,020
			1.2.3.4.6.7.8-Hepta-CDF			0,52	0,01	0,0052
			1.2.3.4.7.8.9-Hepta-CDF			0,20	0,01	0,0020
			OCDF			2,4	0,0001	< 0,001
	Total PCDD					5,4		0,93
	Total PCDF					15		1,8
	TEQ (WHO) (PCDDs and PCDFs)					20		2,7

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

**PCB-results in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland							
	Year	2001							
	Clients Code	FOS 017/2001							
	Sample No. (ERGO)	H-01-08-0583							
	Product								
	Tissue	Fish liver oil capsules							
	Expression of results								
	Stage of marketing								
	Type of sampling								
	Sample No.								
	Area								
	Number of subsamples								
	Fat content (%)	100							
2	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB- 77			395	0.0001	0.040	
	Detection	HRGC/HRMS	PCB- 81			6.9	0.0001	0.00069	
	Accredited	**	PCB- 126			106	0.1	11	
	Uncertainty (%)		PCB- 169			11	0.01	0.11	
3	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB- 105			6162	0.0001	0.62	
	Accredited	**	PCB- 114			279	0.0005	0.14	
	Uncertainty (%)		PCB- 118			12869	0.0001	1.3	
			PCB- 123			n.a.	0.0001	-	
			PCB- 156			1265	0.0005	0.63	
			PCB- 157			323	0.0005	0.16	
			PCB- 167			792	0.00001	0.0079	
			PCB- 189			99	0.0001	0.0099	
	Total non-ortho PCB					518		11	
	Total mono-ortho PCB					21788		2.9	
	Total WHO-PCB					22306		14	
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							16	
	4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
		Methods	*	PCB- 28			1.00		
Accredited		**	PCB- 52			6.4			
Uncertainty (%)			PCB- 101			16			
			PCB- 118			13			
			PCB- 138			23			
			PCB- 153			22			
			PCB- 180			5.4			
5		Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 18			1.2			
	Accredited	**	PCB- 31			4.0			
	Uncertainty (%)		PCB- 33			0.76			
			PCB- 37			0.11			
			PCB- 41			2.2			
			PCB- 44			2.8			
			PCB- 47			1.4			
			PCB- 49			2.0			
			PCB- 51			0.12			
			PCB- 60			1.4			
			PCB- 66			6.1			
			PCB- 74			3.3			
			PCB- 87			6.1			
			PCB- 99			9.3			
			PCB- 110			10			
			PCB- 141			2.3			
			PCB- 151			3.9			
			PCB- 183			1.1			
			PCB- 185			0.14			
			PCB- 187			2.9			
			PCB- 191			0.069			
			PCB- 193			0.38			
			PCB- 194			0.47			
			PCB- 201			0.64			
			PCB- 203			0.83			
	Small differences on totals result from computer roundings								
	* = see report, section "Methods"								

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 018/2001	
	Sample No. (ERGO)	H-01-08-0584	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD	0,073	0,036	< LOQ	1,0	0,036
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD	0,060	0,030	< LOQ	1,0	0,030
	Accredited	**	1.2.3.4.7.8-Hexa-CDD	0,17	0,084	< LOQ	0,1	0,0084
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD	0,14	0,072	< LOQ	0,1	0,0072
			1.2.3.7.8.9-Hexa-CDD	0,13	0,066	< LOQ	0,1	0,0066
			1.2.3.4.6.7.8-Hepta-CDD	0,55	0,27	< LOQ	0,01	0,0027
			OCDD	2,9	1,4	< LOQ	0,0001	< 0,001
3	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			0,53	0,1	0,053
	Accredited	**	1.2.3.7.8-Penta-CDF			0,10	0,05	0,0050
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			0,071	0,5	0,036
			1.2.3.4.7.8-Hexa-CDF			0,061	0,1	0,0061
			1.2.3.6.7.8-Hexa-CDF			0,052	0,1	0,0052
			1.2.3.7.8.9-Hexa-CDF	0,16	0,079	< LOQ	0,1	0,0079
			2.3.4.6.7.8-Hexa-CDF	0,22	0,11	< LOQ	0,1	0,011
			1.2.3.4.6.7.8-Hepta-CDF	0,50	0,25	< LOQ	0,01	0,0025
			1.2.3.4.7.8.9-Hepta-CDF	0,22	0,11	< LOQ	0,01	0,0011
			OCDF	2,7	1,3	< LOQ	0,0001	< 0,001
	Total PCDD					< LOQ		0,092
	Total PCDF					0,82		0,13
	TEQ (WHO) (PCDDs and PCDFs)					0,82		0,22

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

**PCB-results in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland							
	Year	2001							
	Clients Code	FOS 018/2001							
	Sample No. (ERGO)	H-01-08-0584							
	Product								
	Tissue	Fish liver oil capsules							
	Expression of results								
	Stage of marketing								
	Type of sampling								
	Sample No.								
	Area								
	Number of subsamples								
	Fat content (%)	100							
2	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB-	77		21	0,0001	0,0021	
	Detection	HRGC/HRMS	PCB-	81		0,77	0,0001	< 0,001	
	Accredited	**	PCB-	126		17	0,1	1,7	
	Uncertainty (%)		PCB-	169		5,2	0,01	0,052	
3	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ	
	Methods	*	PCB-	105		6779	0,0001	0,68	
	Accredited	**	PCB-	114		496	0,0005	0,25	
	Uncertainty (%)		PCB-	118		17967	0,0001	1,8	
			PCB-	123		n.a.	0,0001	-	
			PCB-	156		2521	0,0005	1,3	
			PCB-	157		735	0,0005	0,37	
			PCB-	167		1683	0,00001	0,017	
			PCB-	189		290	0,0001	0,029	
	Total non-ortho PCB					45		1,8	
	Total mono-ortho PCB					30471		4,4	
	Total WHO-PCB					30516		6,2	
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							6,4	
	4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
		Methods	*	PCB-	28		0,81		
		Accredited	**	PCB-	52		3,8		
		Uncertainty (%)		PCB-	101		19		
			PCB-	118		18			
			PCB-	138		57			
			PCB-	153		62			
			PCB-	180		21			
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results			
	Methods	*	PCB-	18	1,8	0,89	< LOQ		
	Accredited	**	PCB-	31			0,69		
	Uncertainty (%)		PCB-	33	0,80	0,40	< LOQ		
			PCB-	37			0,079		
			PCB-	41			2,1		
			PCB-	44			1,8		
			PCB-	47			1,1		
			PCB-	49			1,4		
			PCB-	51			0,039		
			PCB-	60			1,8		
			PCB-	66			4,1		
			PCB-	74			4,3		
			PCB-	87			6,2		
			PCB-	99			14		
			PCB-	110			11		
			PCB-	141			4,8		
			PCB-	151			6,9		
			PCB-	183			4,1		
			PCB-	185			0,39		
			PCB-	187			9,2		
			PCB-	191			0,21		
			PCB-	193			1,2		
			PCB-	194			2,0		
			PCB-	201			2,7		
			PCB-	203			3,0		
			PCB-	206			0,82		
			PCB-	209			0,60		
	Small differences on totals result from computerroundings								
	* = see report, section "Methods"								
	** = Accreditation in progress								
	(DACH 175/ERGO/20.06.00/00)								

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 019/2001	
	Sample No. (ERGO)	H-01-08-0585	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDD			0,61	1,0	0,61
	Detection	HRGC/HRMS	1.2.3.7.8-Penta-CDD			1,0	1,0	1,0
	Accredited	**	1.2.3.4.7.8-Hexa-CDD			0,14	0,1	0,014
	Uncertainty (%)		1.2.3.6.7.8-Hexa-CDD			1,3	0,1	0,13
			1.2.3.7.8.9-Hexa-CDD			0,26	0,1	0,026
			1.2.3.4.6.7.8-Hepta-CDD			0,50	0,01	0,0050
			OCDD			1,6	0,0001	< 0,001
	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2.3.7.8-Tetra-CDF			13	0,1	1,3
3	Accredited	**	1.2.3.7.8-Penta-CDF			2,4	0,05	0,12
	Uncertainty (%)		2.3.4.7.8-Penta-CDF			4,5	0,5	2,3
			1.2.3.4.7.8-Hexa-CDF			0,84	0,1	0,084
			1.2.3.6.7.8-Hexa-CDF			0,84	0,1	0,084
			1.2.3.7.8.9-Hexa-CDF	0,073	0,037	< LOQ	0,1	0,0037
			2.3.4.6.7.8-Hexa-CDF			0,77	0,1	0,077
			1.2.3.4.6.7.8-Hepta-CDF	0,52	0,26	< LOQ	0,01	0,0026
			1.2.3.4.7.8.9-Hepta-CDF	0,22	0,11	< LOQ	0,01	0,0011
			OCDF	2,7	1,4	< LOQ	0,0001	< 0,001
	Total PCDD					5,4		1,8
	Total PCDF					22		3,9
	TEQ (WHO) (PCDDs and PCDFs)					27		5,7

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

PCB-results in Fish liver oil capsules **- original wet weight based -**

1	Country	Ireland						
	Year	2001						
	Clients Code	FOS 019/2001						
	Sample No. (ERGO)	H-01-08-0585						
	Product							
	Tissue	Fish liver oil capsules						
	Expression of results							
	Stage of marketing							
	Type of sampling							
	Sample No.							
	Area							
	Number of subsamples							
	Fat content (%)	100						
2	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 77			283	0,0001	0,028
	Detection	HRGC/HRMS	PCB- 81			7,4	0,0001	0,00074
	Accredited	**	PCB- 126			116	0,1	12
	Uncertainty (%)		PCB- 169			24	0,01	0,24
3	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 105			6325	0,0001	0,63
	Accredited	**	PCB- 114			357	0,0005	0,18
	Uncertainty (%)		PCB- 118			16784	0,0001	1,7
			PCB- 123			n.a.	0,0001	-
			PCB- 156			2321	0,0005	1,2
			PCB- 157			594	0,0005	0,30
			PCB- 167			1353	0,00001	0,014
			PCB- 189			237	0,0001	0,024
	Total non-ortho PCB					430		12
	Total mono-ortho PCB					27970		4,0
	Total WHO-PCB					28400		16
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							22
4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 28			2,0		
	Accredited	**	PCB- 52			6,3		
	Uncertainty (%)		PCB- 101			19		
			PCB- 118			17		
			PCB- 138			47		
			PCB- 153			53		
			PCB- 180			13		
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 18			1,4		
	Accredited	**	PCB- 31			2,1		
	Uncertainty (%)		PCB- 33			0,98		
			PCB- 37			0,060		
			PCB- 41			2,3		
			PCB- 44			2,5		
			PCB- 47			1,9		
			PCB- 49			2,0		
			PCB- 51			0,083		
			PCB- 60			2,3		
			PCB- 66			5,0		
			PCB- 74			5,8		
			PCB- 87			5,5		
			PCB- 99			13		
			PCB- 110			11		
			PCB- 141			3,3		
			PCB- 151			6,3		
			PCB- 183			1,9		
			PCB- 185			0,20		
			PCB- 187			4,5		
			PCB- 191			0,16		
			PCB- 193			0,96		
			PCB- 194			1,4		
			PCB- 201			1,7		
			PCB- 203			1,6		
			PCB- 206			0,31		
			PCB- 209			0,21		
	Small differences on totals result from computerroundings							
	* = see report, section "Methods"							
	** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)							

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

**PCDDs/PCDFs in Fish liver oil capsules
- original wet weight based -**

1	Country	Ireland	Remarks
	Year	2001	
	Clients Code	FOS 020/2001	
	Sample No. (ERGO)	H-01-08-0586	
	Product		
	Tissue	Fish liver oil capsules	
	Expression of results		
	Stage of marketing		
	Type of sampling		
	Sample No.		
	Area		
	Number of subsamples		
	Fat content (%)	100	

2	PCDDs (ppt)		PCDD congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2,3,7,8-Tetra-CDD			0.42	1.0	0.42
	Detection	HRGC/HRMS	1,2,3,7,8-Penta-CDD			0.92	1.0	0.92
	Accredited	**	1,2,3,4,7,8-Hexa-CDD			0.15	0.1	0.015
	Uncertainty (%)		1,2,3,6,7,8-Hexa-CDD			0.68	0.1	0.068
			1,2,3,7,8,9-Hexa-CDD			0.15	0.1	0.015
			1,2,3,4,6,7,8-Hepta-CDD			0.62	0.01	0.0062
			OCDD			2.3	0.0001	< 0.001
3	PCDFs (ppt)		PCDF congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	2,3,7,8-Tetra-CDF			9.5	0.1	0.95
	Accredited	**	1,2,3,7,8-Penta-CDF			1.1	0.05	0.057
	Uncertainty (%)		2,3,4,7,8-Penta-CDF			2.7	0.5	1.3
			1,2,3,4,7,8-Hexa-CDF			0.37	0.1	0.037
			1,2,3,6,7,8-Hexa-CDF			0.30	0.1	0.030
			1,2,3,7,8,9-Hexa-CDF	0.060	0.030	< LOQ	0.1	0.0030
			2,3,4,6,7,8-Hexa-CDF			0.31	0.1	0.031
			1,2,3,4,6,7,8-Hepta-CDF	0.50	0.25	< LOQ	0.01	0.0025
			1,2,3,4,7,8,9-Hepta-CDF			0.12	0.01	0.0012
			OCDF	2.6	1.3	< LOQ	0.0001	< 0.001
	Total PCDD					5.2		1.4
	Total PCDF					14		2.4
	TEQ (WHO) (PCDDs and PCDFs)					20		3.9

Small differences on totals result from computer roundings

* = see report, section "Methods"

** = Accreditation in progress (DACH 175/ERGO/20.06.00/00)

PCB-results in Fish liver oil capsules - original wet weight based -

1	Country	Ireland						
	Year	2001						
	Clients Code	FOS 020/2001						
	Sample No. (ERGO)	H-01-08-0586						
	Product							
	Tissue	Fish liver oil capsules						
	Expression of results							
	Stage of marketing							
	Type of sampling							
	Sample No.							
	Area							
	Number of subsamples							
	Fat content (%)	100						
2	non-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 77			193	0,0001	0,019
	Detection	HRGC/HRMS	PCB- 81			6,5	0,0001	0,00065
	Accredited	**	PCB- 126			80	0,1	8,0
	Uncertainty (%)		PCB- 169			16	0,01	0,16
3	mono-ortho PCBs (ppt)		PCB congeners	LOQ	LOD	Results	TEF	TEQ
	Methods	*	PCB- 105			4740	0,0001	0,47
	Accredited	**	PCB- 114			270	0,0005	0,14
	Uncertainty (%)		PCB- 118			14017	0,0001	1,4
			PCB- 123			n.a.	0,0001	-
			PCB- 156			1591	0,0005	0,80
			PCB- 157			462	0,0005	0,23
			PCB- 167			750	0,00001	0,0075
			PCB- 189			175	0,0001	0,018
	Total non-ortho PCB					295		8,2
	Total mono-ortho PCB					22005		3,1
	Total WHO-PCB					22300		11
	TEQ (WHO) (PCDDs/PCDFs and WHO-PCBs)							15
4	PCB-7 (6) (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 28			1,7		
	Accredited	**	PCB- 52			7,1		
	Uncertainty (%)		PCB- 101			16		
			PCB- 118			14		
			PCB- 138			42		
			PCB- 153			47		
			PCB- 180			11		
5	Other PCBs (ppb)		PCB congeners	LOQ	LOD	Results		
	Methods	*	PCB- 18			0,90		
	Accredited	**	PCB- 31			2,1		
	Uncertainty (%)		PCB- 33			0,70		
			PCB- 37			0,042		
			PCB- 41			1,9		
			PCB- 44			2,2		
			PCB- 47			2,2		
			PCB- 49			2,1		
			PCB- 51			0,060		
			PCB- 60			1,9		
			PCB- 66			4,5		
			PCB- 74			6,6		
			PCB- 87			4,6		
			PCB- 99			16		
			PCB- 110			7,0		
			PCB- 141			2,1		
			PCB- 151			4,4		
			PCB- 183			1,8		
			PCB- 185			0,13		
			PCB- 187			5,1		
			PCB- 191			0,13		
			PCB- 193			0,97		
			PCB- 194			1,1		
			PCB- 201			1,6		
			PCB- 203			1,3		
			PCB- 206			0,23		
			PCB- 209			0,12		
	Small differences on totals result from computerroundings							
	* = see report, section "Methods"							
	** = Accreditation in progress							
	(DACH 175/ERGO/20.06.00/00)							

- End of Report 2001-0837-2c.doc

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

Phone: (+49 40) 69 70 96-0

Fax: (+49 40) 69 70 96-99

e-mail: ergo.umwelt@t-online.de

ERGO Forschungsgesellschaft mbH
Geierstraße 1
22305 Hamburg

e-mail: ergo.umwelt@t-online.de

Phone: (+49 40) 69 70 96-0
Fax: (+49 40) 69 70 96-99

