

油症検診受診者血中ダイオキシン類濃度調査結果(2016年)

(pg/g lipid)

Congeners	2016年検診結果								一般の人			
	認定(N=147)				未認定(N=138)				(2004年, N=127)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
2,3,7,8-TCDD	1.6	0.90	ND	4.7	1.4	0.92	ND	4.9	1.9	0.84	ND	4.3
1,2,3,7,8-PeCDD	7.6	3.9	1.1	20	5.7	3.9	ND	18	9.0	3.4	3.2	20
1,2,3,4,7,8-HxCDD	2.6	1.9	ND	11	2.3	1.6	ND	8	3.6	1.9	ND	13
1,2,3,6,7,8-HxCDD	29	22	ND	130	18	13	3.5	81	28	11	7.3	70
1,2,3,7,8,9-HxCDD	4.6	3.4	ND	18	3.4	2.8	ND	18	4.5	2.8	ND	16
1,2,3,4,6,7,8-HpCDD	40	28	7.2	190	35	30	5.8	230	78	55	18	470
OCDD	620	530	77	4000	480	610	72	4700	1200	640	180	7600
Total PCDDs	700	570	100	4300	550	650	92	4900	1300	1000	210	8200
2,3,7,8-TCDF	2.3	2.2	ND	14	3.1	4.0	ND	31	1.0	0.72	ND	4.5
1,2,3,7,8-PeCDF	1.6	1.5	ND	12	1.7	1.6	ND	8.7	0.67	0.55	ND	4.6
2,3,4,7,8-PeCDF	49	88	2.8	610	18	27	2.7	300	17	7.7	6.0	63
1,2,3,4,7,8-HxCDF	11	23	ND	210	4.7	6.3	ND	65	5.0	2.7	ND	20
1,2,3,6,7,8-HxCDF	6.6	7.6	ND	58	4.4	3.9	ND	27	5.7	2.6	ND	16
2,3,4,6,7,8-HxCDF	1.2	0.79	ND	6.8	1.1	0.64	ND	5.7	1.2	0.8	ND	5.2
1,2,3,7,8,9-HxCDF	1.1	0.97	ND	13	ND				ND			
1,2,3,4,6,7,8-HpCDF	2.1	1.7	ND	10	1.9	1.7	ND	14	2.2	2.1	ND	14
1,2,3,4,7,8,9-HpCDF	1.2	1.9	ND	24	ND				ND			
OCDF	2.2	2.9	ND	38	ND				2.1	1.4	ND	18
Total PCDFs	78	120	12	900	39	37	12	390	37	14	15	86
344'5-TCB(81)	5.7	3.1	ND	34	5.4	1.8	ND	19	5.6	2.3	ND	24
33'44'-TCB(77)	8.0	5.5	ND	41	10	6.9	ND	38	8.4	4.8	ND	31
33'44'5-PenCB(126)	97	86	ND	540	86	88	ND	410	110	80	17	520
33'44'55'-HxCB(169)	120	85	11	430	81	68	ND	330	64	27	16	190
Total Non-ortho PCBs	230	150	26	900	180	150	27	650	190	110	59	740
Total	1000	650	180	4500	770	730	150	5600	1600	1000	290	8500
◆【WHO-98】◆												
PCDDs-TEQ	13	6.7	2.6	33	10	6.3	1.7	34	15	5.7	5.0	34
PCDFs-TEQ	27	47	1.9	330	11	14	1.9	160	10	4.3	3.5	33
Non-ortho PCBs-TEQ	11	9.1	0.62	57	9.5	9.3	0.62	43	12	8.2	2.0	54
Total TEQ	51	53	5.6	370	30	25	4.8	190	37	16	12	100
◆【WHO-05】◆												
PCDDs-TEQ	13	6.7	2.6	33	10	6.3	1.7	34	16	5.9	5.1	35
PCDFs-TEQ	17	29	1.3	210	6.9	9.0	1.3	98	6.6	2.5	2.3	14
Non-ortho PCBs-TEQ	13	10	0.85	63	11	10	0.87	47	13	8.6	2.6	58
Total TEQ	44	37	5.7	250	28	22	4.6	130	37	16	12	100
Lipid(%)	0.33	0.07	0.13	0.80	0.33	0.05	0.18	0.55	0.33	0.05	0.22	0.49

CB: chlorinated biphenyl, CDD: chlorinated dibenzo-p-dioxins, CDF: chlorinated dibenzofurans, Hx: hexa, Hp: hepta, ND: less than the determination limit, OCDD: octachlorodibenzo-p-dioxin, OCDF: octachlorodibenzofurans, PCB: polychlorinated biphenyl, PCDD: polychlorinated dibenzo-p-dioxin, PCDF: polychlorinated dibenzofuran, Pe: penta, TCB: tetrachlorobiphenyl, TCDD: tetrachlorodibenzo-p-dioxin, TCDF: tetrachlorodibenzofuran, TEQ: toxic equivalent quantity.

表2 油症認定患者及び一般人の血中PCDDs、PCDFs及びノンオルソPCB濃度測定結果
(2001-2016年)

Congeners	油症患者(N=1023)					一般人(N=127、2004年)				
	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median
2,3,7,8-TCDD	1.6	1.1	ND	8.6	1.4	1.9	0.84	ND	4.3	1.8
1,2,3,7,8-PeCDD	9.0	5.6	ND	48	7.7	9.0	3.4	3.2	20	8.7
1,2,3,4,7,8-HxCDD	2.5	1.9	ND	15	2.2	3.6	1.9	ND	13	3.2
1,2,3,6,7,8-HxCDD	36	36	ND	320	24	28	11	7.3	70	25
1,2,3,7,8,9-HxCDD	3.8	3.1	ND	26	3.0	4.5	2.8	ND	16	3.9
1,2,3,4,6,7,8-HpCDD	42	47	5.5	1200	34	78	55	18	470	62
OCDD	580	520	72	7900	470	1200	640	180	7600	940
Total PCDDs	670	580	100	9200	560	1300	1000	210	8200	1000
2,3,7,8-TCDF	2.2	4.8	ND	83	1.3	1.0	0.72	ND	4.5	ND
1,2,3,7,8-PeCDF	1.2	1.3	ND	13	ND	0.67	0.55	ND	4.6	ND
2,3,4,7,8-PeCDF	110	180	2.8	1800	33	17	7.7	6.0	63	16
1,2,3,4,7,8-HxCDF	25	55	ND	580	6.2	5.0	2.7	ND	20	4.4
1,2,3,6,7,8-HxCDF	12	18	ND	170	5.6	5.7	2.6	ND	16	5.2
2,3,4,6,7,8-HxCDF	1.2	0.77	ND	8.7	ND	1.2	0.8	ND	5.2	ND
1,2,3,7,8,9-HxCDF	1.0	0	ND	13	ND	ND				
1,2,3,4,6,7,8-HpCDF	2.3	3.4	ND	74	ND	2.2	2.1	ND	14	ND
1,2,3,4,7,8,9-HpCDF	1.0	0.73	ND	24	ND	ND				
OCDF	2.1	1.6	ND	38	ND	2.1	1.4	ND	18	ND
Total PCDFs	160	250	12	2600	58	37	14	15	86	35
344'5-TCB(#81)	5.6	3.3	ND	49	ND	5.6	2.3	ND	24	ND
33'44'-TCB(#77)	8.1	9.5	ND	150	ND	8.4	4.8	ND	31	ND
33'44'5-PenCB(#126)	95	82	ND	680	74	110	80	17	520	90
33'44'55'-HxCB(#169)	160	140	10	1300	1200	64	27	16	190	58
Total Non-ortho PCBs	270	200	25	1500	220	190	110	59	740	160
Total	1100	770	170	9700	920	1600	1000	290	8500	1300
◆【WHO-98】◆										
T PCDDs-TEQ	15	10	1.7	77	13	15	5.7	5.0	34	15
T PCDFs-TEQ	58	97	1.9	970	18	10	4.3	3.5	33	10
T Non-ortho PCBs-TEQ	11	9.0	0.61	77	9.1	12	8.2	2.0	54	9.5
Total-TEQ	84	110	5.6	1100	46	37	16	12	100	35
◆【WHO-05】◆										
T PCDDs-TEQ	15	9.5	1.8	76	13	16	5.9	5.1	35	11
T PCDFs-TEQ	33	55	1.3	440	11	6.6	2.5	2.3	14	10
T Non-ortho PCBs-TEQ	14	11	0.82	94	11	13	8.6	2.6	58	9.5
Total-TEQ	62	68	5.7	560	40	37	16	12	100	31
Lipid(%)	0.30	0.07	0.13	0.80	0.29	0.33	0.05	0.22	0.49	0.31
Age(years)	65.9	13	31	98	66	68.1	5.4	60	86	67

CB: chlorinated biphenyl, CDD: chlorinated dibenzo-p-dioxins, CDF: chlorinated dibenzofurans, Hx: hexa, Hp: hepta, ND: less than the determination limit, OCDD: octachlorodibenzo-p-dioxin, OCDF: octachlorodibenzofurans, PCB: polychlorinated biphenyl, PCDD: polychlorinated dibenzo-p-dioxin, PCDF: polychlorinated dibenzofuran, Pe: penta, TCB: tetrachlorobiphenyl, TCDD: tetrachlorodibenzo-p-dioxin, TCDF: tetrachlorodibenzofuran, TEQ: toxic equivalent quantity.

表3 油症患者、同居家族認定患者の血液中PCDD、PCDF及びノンオルソPCB濃度測定結果

Congeners	油症患者(同居家族認定を除く、N=884)					同居家族認定者 (N=139)					一般の人 (N=127、2004年)				
	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median
2,3,7,8-TCDD	1.6	1.1	ND	8.6	1.5	1.5	1.1	ND	7.4	1.3	1.9	0.84	ND	4.3	1.8
1,2,3,7,8-PeCDD	9.4	5.8	ND	48	8.2	6.8	3.8	ND	28	6.4	9.0	3.4	3.2	19.8	8.7
1,2,3,4,7,8-HxCDD	2.5	1.9	ND	15	2.2	2.2	1.6	ND	10	ND	3.6	1.9	ND	13.4	3.2
1,2,3,6,7,8-HxCDD	38	37	ND	320	26	22	16	2.9	91	18	28	11	7.3	70.1	25
1,2,3,7,8,9-HxCDD	3.8	3.3	ND	36	3.0	3.7	3.2	ND	17	2.7	4.5	2.8	ND	16.4	3.9
1,2,3,4,6,7,8-HpCDD	44	53	ND	1200	35	38	26	7.2	170	31	78	55	18	470	62
OCDD	610	570	72	7900	500	470	390	77	2900	360	1200	640	180	7600	940
Total PCDDs	710	620	100	9200	590	540	430	100	3200	420	1300	1000	210	8200	1000
2,3,7,8-TCDF	2.3	5.1	ND	83	1.2	1.5	1.5	ND	7.5	ND	1.0	0.72	ND	4.5	ND
1,2,3,7,8-PeCDF	1.2	1.3	ND	13	ND	1.1	1.1	ND	8.3	ND	0.67	0.55	ND	4.6	ND
2,3,4,7,8-PeCDF	120	190	2.8	1800	41	28	50	2.8	440	15	17	7.7	6.0	63.4	16
1,2,3,4,7,8-HxCDF	28	59	ND	580	7.5	5.9	12	ND	89	3.2	5.0	2.7	ND	19.8	4.4
1,2,3,6,7,8-HxCDF	13	19	ND	170	6.2	4.8	5.4	ND	35	3.7	5.7	2.6	ND	15.8	5.2
2,3,4,6,7,8-HxCDF	1.2	0.80	ND	8.7	ND	1.1	0.61	ND	5.6	ND	1.2	0.8	ND	5.2	ND
1,2,3,7,8,9-HxCDF	1.0	0.11	ND	3.3	ND	1.1	1.0	ND	13	ND	ND				
1,2,3,4,6,7,8-HpCDF	2.3	3.6	ND	74	ND	1.8	1.8	ND	12	ND	2.2	2.1	ND	14.2	ND
1,2,3,4,7,8,9-HpCDF	1.0	0.06	ND	2.7	ND	1.2	2.0	ND	24	ND	ND				
OCDF	2.0	1.2	ND	38	ND	2.3	3.0	ND	38	ND	2.1	1.4	ND	17.8	ND
Total PCDFs	170	270	12	2600	69	49	67	12	570	31	37	14	15	86	35
344'5-TCB(#81)	5.6	3.4	ND	49	ND	5.2	1.6	ND	18	ND	5.6	2.3	ND	24.0	ND
33'44'-TCB(#77)	8.2	10	ND	150	ND	6.8	4.1	ND	23	ND	8.4	4.8	ND	31.2	ND
33'44'5-PenCB(#126)	98	84	ND	680	76	83	73	ND	510	68	110	80	17	520	90
33'44'55'-HxCB(#169)	170	150	10	1300	130	92	69	12	390	68	64	27	16	190	58
Total Non-ortho PCBs	280	210	25	1500	240	190	130	32	840	160	190	110	59	740	160
Total	1200	810	170	9700	990	780	530	190	3500	660	1600	1000	290	8500	1300
◆【WHO-98】◆															
T PCDDs-TEQ	16	10	1.7	77	14	11	6.5	2.6	48	10	15	5.7	5.0	34.5	15
T PCDFs-TEQ	65	100	2.0	970	22	16	27	1.9	230	8.7	10	4.3	3.5	33.5	10
T Non-ortho PCBs-TEQ	12	9.2	0.61	77	9.5	9.2	7.7	0.67	54	7.4	12	8.2	2.0	53.8	9.5
Total-TEQ	93	110	6.3	1100	52	36	36	5.6	280	28	37	16	12	100	35
◆【WHO-05】◆															
T PCDDs-TEQ	16	10	1.8	76	13	12	6.5	2.6	48	10	16	5.9	5.1	35.3	11
T PCDFs-TEQ	38	60	1.4	440	14	10	17	1.3	140	5.7	6.6	2.5	2.3	14.4	10
T Non-ortho PCBs-TEQ	15	11	0.82	94	12	11	8.8	1.0	60	9.3	13	8.6	2.6	57.6	9.5
Total-TEQ	68	73	6.3	560	44	33	27	5.7	210	26	37	16	12	100	31
Lipid(%)	0.29	0.07	0.13	0.80	0.29	0.30	0.06	0.20	0.59	0.30	0.33	0.05	0.22	0.49	0.31
Age(years)	66.3	13.6	31	98	67	61.5	10.6	45	90	60	68.1	5.4	60	86	67

CB: chlorinated biphenyl, CDD: chlorinated dibenzo-p-dioxins, CDF: chlorinated dibenzofurans, Hx: hexa, Hp: hepta, ND: less than the determination limit, OCDD: octachlorodibenzo-p-dioxin, OCDF: octachlorodibenzofurans, PCB: polychlorinated biphenyl, PCDD: polychlorinated dibenzo-p-dioxin, PCDF: polychlorinated dibenzofuran, Pe: penta, TCB: tetrachlorobiphenyl, TCDD: tetrachlorodibenzo-p-dioxin, TCDF: tetrachlorodibenzofuran, TEQ: toxic equivalent quantity.

表4 油症患者、未認定者の血液中PCDD、PCDF及びノンオルソPCB濃度測定結果
(2001-2016年)

Congeners	油症患者 (N=1023)					未認定者 (N=792)					一般人 (N=127, 2004年)				
	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median
2,3,7,8-TCDD	1.6	1.1	ND	8.6	1.4	1.4	1.0	ND	7.8	1.2	1.9	0.84	ND	4.3	1.8
1,2,3,7,8-PeCDD	9.0	5.6	ND	48	7.7	6.7	4.1	ND	29	5.9	9.0	3.4	3.2	20	8.7
1,2,3,4,7,8-HxCDD	2.5	1.9	ND	15	2.2	2.5	1.8	ND	18	2.2	3.6	1.9	ND	13	3.2
1,2,3,6,7,8-HxCDD	36	36	ND	320	24	21	16	ND	180	17	28	11	7.3	70	25
1,2,3,7,8,9-HxCDD	3.8	3.1	ND	26	3.0	3.6	3.0	ND	28	3.0	4.5	2.8	ND	16	3.9
1,2,3,4,6,7,8-HpCDD	42	47	5.5	1200	34	41	31	ND	300	34	78	55	18	470	62
OCDD	580	520	72	7900	470	590	490	56	5200	460	1200	640	180	7600	940
Total PCDDs	670	580	100	9200	560	670	530	73	5600	530	1300	1000	210	8200	1000
2,3,7,8-TCDF	2.2	4.8	ND	83	1.3	1.6	2.3	ND	31	ND	1.0	0.72	ND	4.5	ND
1,2,3,7,8-PeCDF	1.2	1.3	ND	13	ND	1.0	1.2	ND	10	ND	0.67	0.55	ND	4.6	ND
2,3,4,7,8-PeCDF	110	180	2.8	1800	33	25	38	1.3	410	14	17	7.7	6.0	36	16
1,2,3,4,7,8-HxCDF	25	55	ND	580	6.2	5.6	10	ND	140	3.2	5.0	2.7	ND	20	4.4
1,2,3,6,7,8-HxCDF	12	18	ND	170	5.6	4.9	4.4	ND	39	3.7	5.7	2.6	ND	16	5.2
2,3,4,6,7,8-HxCDF	1.2	0.77	ND	8.7	ND	1.2	0.81	ND	9.2	ND	1.2	0.8	ND	5.2	ND
1,2,3,7,8,9-HxCDF	1.0	0	ND	12.6	ND	ND				ND	ND				
1,2,3,4,6,7,8-HpCDF	2.3	3.4	ND	74	ND	2.3	3.1	ND	46	ND	2.2	2.1	ND	14.2	ND
1,2,3,4,7,8,9-HpCDF	1.0	0.7	ND	24.3	ND	1.0	0.19	ND	6.1	ND	ND				
OCDF	2.1	1.6	ND	38	ND	2.0	0.37	ND	9.1	ND	2.1	1.4	ND	18	ND
Total PCDFs	160	250	12	2600	58	45	52	10	490	31	37	14	15	86	35
344'5'-TCB(#81)	5.6	3.3	ND	49	ND	5.6	3.4	ND	64	ND	5.6	2.3	ND	24	ND
33'44'-TCB(#77)	8.1	9.5	ND	150	ND	7.7	8.0	ND	160	ND	8.4	4.8	ND	31	ND
33'44'5'-PenCB(#126)	95	82	ND	680	74	87	91	ND	660	60	110	80	17	520	90
33'44'55'-HxCB(#169)	160	140	10	1300	1200	82	71	ND	740	62	64	27	16	190	58
Total Non-ortho PCBs	270	200	25	1500	220	180	150	20	960	140	190	110	59	740	160
Total	1100	770	170	9700	920	900	630	150	6300	740	1600	1000	290	8500	1300
◆【WHO-98】◆															
T PCDDs-TEQ	15	10	1.7	77	13	11	6.7	1.5	45	10	15	5.7	5.0	34	15
T PCDFs-TEQ	58	97	1.9	970	18	14	20	1.2	210	8.2	10	4.3	3.5	33	10
T Non-ortho PCBs-TEQ	11	9	0.6	77	9	9.5	9.6	0.6	69	6.7	12	8.2	2.0	54	9.5
Total-TEQ	84	110	5.6	1100	46	34	30	3.4	240	26	37	16	12	100	35
◆【WHO-05】◆															
T PCDDs-TEQ	15	9.5	1.8	76	13	11	6.5	1.5	45	10	16	5.9	5.1	35	11
T PCDFs-TEQ	33	55	1.3	440	11	8	11	0.9	130	5.5	6.6	2.5	2.3	14	10
T Non-ortho PCBs-TEQ	14	11	0.8	94	11	11	11	0.7	75	8.2	13	8.6	2.6	58	9.5
Total-TEQ	62	68	5.7	560	40	30	23	3.3	160	25	37	16	12	100	31
Lipid(%)	0.30	0.07	0.13	0.80	0.29	0.26	0.12	0.01	0.52	0.28	0.33	0.05	0.22	0.49	0.31
Age(years)	65.9	13.2	31	98	66	57.1	18.2	5	90	59	68.1	5.4	60	86	67

CB: chlorinated biphenyl, CDD: chlorinated dibenzo-p-dioxins, CDF: chlorinated dibenzofurans, Hx: hexa, Hp: hepta, ND: less than the determination limit, OCDD: octachlorodibenzo-p-dioxin, OCDF: octachlorodibenzofurans, PCB: polychlorinated biphenyl, PCDD: polychlorinated dibenzo-p-dioxin, PCDF: polychlorinated dibenzofuran, Pe: penta, TCB: tetrachlorobiphenyl, TCDD: tetrachlorodibenzo-p-dioxin, TCDF: tetrachlorodibenzofuran, TEQ: toxic equivalent quantity.

図1 油症認定患者の血液中2, 3, 4, 7, 8-PeCDF濃度分布 (2001-2016年、n=1,023)
(pg/g lipid)

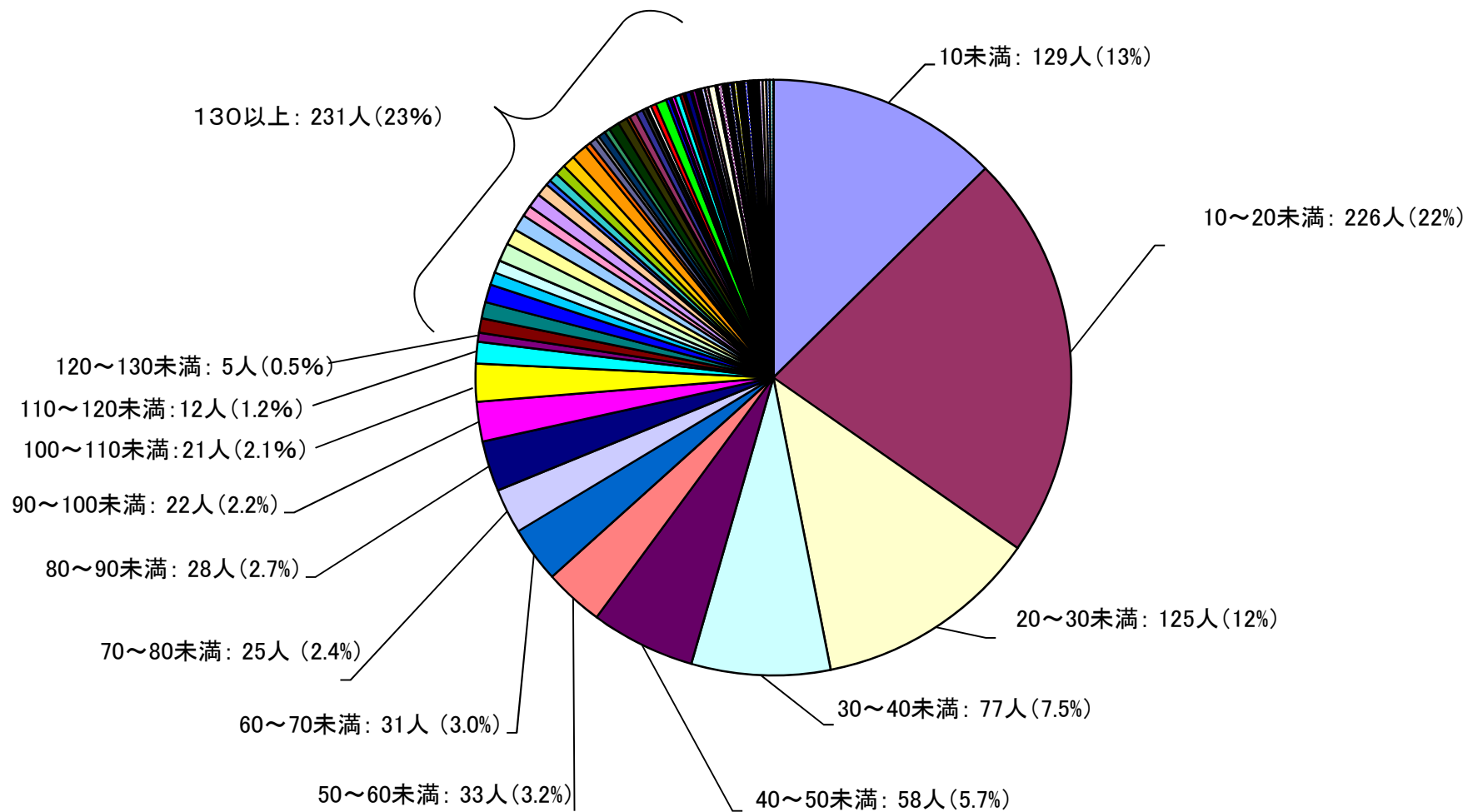


図2 未認定者の血液中2, 3, 4, 7, 8-PCDF濃度(2001-2016年、n=792)
(pg/g lipid)

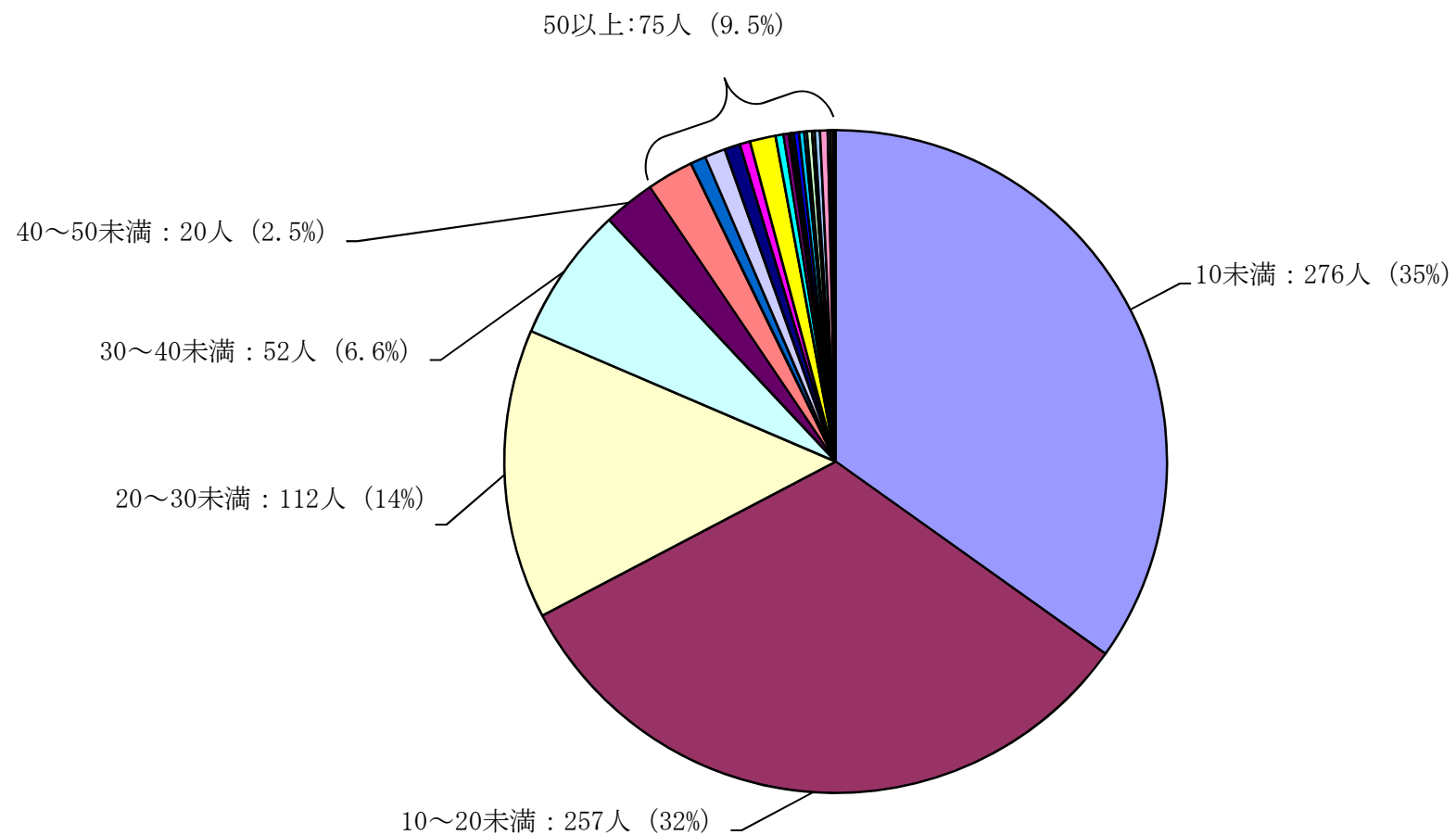


図3 未認定者の検診受診回数(2001-2016年、n=792)

