

厚生労働科学研究補助金（健康科学総合研究事業）
分担研究報告書

科別	大塚 (N=373)		駒山 (N=259)		北九州 (N=197)		その他 (N=123)		合計	
	Medians	25% - 75%	Medians	25% - 75%	Medians	25% - 75%	Medians	25% - 75%	Medians	25% - 75%
◆ Alternaria	0	0	0	0	0	0	0	0	0	0
◆ Aspergillus	0	0	0	0	0	0	0	0	0	0
◆ Aureobasidium	0	0	0	0	0	0	0	0	0	0
◆ Candida	0	0	0	0	0	0	0	0	0	0
◆ Chaetomium	120	68 - 190	150	88 - 288	140	30 - 168	190	60 - 220	0	0
◆ Cladosporium	0	0	0	0	0	0	0	0	0	0
◆ Cryptosporidium	0	0	0	0	0	0	0	0	0	0
◆ Eurotium	0	0	0	0	0	0	0	0	0	0
◆ Rhizoglyphus	0	0	0	0	0	0	0	0	0	0
◆ Rhodotorula	0	0	0	0	0	0	0	0	0	0
Alicanteum sp.	0	0	0	0	0	0	0	0	0	0
Alternaria sp.	0	0	0	0	0	0	0	0	0	0
Alternaria alternata	0	0	0	0	0	0	0	0	0	0
Aspergillus	0	0	0	0	0	0	0	0	0	0
Aspergillus album	0	0	0	0	0	0	0	0	0	0
Aspergillus sp.	0	0	0	0	0	0	0	0	0	0
Aspergillus avramorii	0	0	0	0	0	0	0	0	0	0
Aspergillus clavatus	0	0	0	0	0	0	0	0	0	0
Aspergillus flavus	0	0	0	0	0	0	0	0	0	0
Aspergillus fumigatus	0	0	0	0	0	0	0	0	0	0
Aspergillus terreus	0	0	0	0	0	0	0	0	0	0
Aureobasidium sp.	0	0	0	0	0	0	0	0	0	0
Candida	0	0	0	0	0	0	0	0	0	0
Candida albicans	0	0	0	0	0	0	0	0	0	0
Chaetomium	0	0	0	0	0	0	0	0	0	0
Chaetomium sp.	0	0	0	0	0	0	0	0	0	0
Cladosporium	0	0	0	0	0	0	0	0	0	0
Cladosporium chlamydosporium	120	60 - 190	100	50 - 170	130	75 - 290	140	10 - 150	100	10 - 260
Cladosporium cladosporioides	0	0	0	0	0	0	0	0	0	0
Cladosporium sphaerospermum	0	0	0	0	0	0	0	0	0	0
Cyprosema adhaesum	0	0	0	0	0	0	0	0	0	0
Cyprosema laurenti	0	0	0	0	0	0	0	0	0	0
Dematiaceae	0	0	0	0	0	0	0	0	0	0
Dematiaceae sp.	0	0	0	0	0	0	0	0	0	0
Emzeccaria	0	0	0	0	0	0	0	0	0	0
Emzeccaria sp.	0	0	0	0	0	0	0	0	0	0
Empodisma albata	0	0	0	0	0	0	0	0	0	0
Empodisma sp.	0	0	0	0	0	0	0	0	0	0
Epicoccum	0	0	0	0	0	0	0	0	0	0
Epicoccum sp.	0	0	0	0	0	0	0	0	0	0
Euopodium	0	0	0	0	0	0	0	0	0	0
Euopodium sp.	0	0	0	0	0	0	0	0	0	0
Eurotium	0	0	0	0	0	0	0	0	0	0
Eurotium sp.	0	0	0	0	0	0	0	0	0	0
Exoascus cheliceri	0	0	0	0	0	0	0	0	0	0
Exoascus sp.	0	0	0	0	0	0	0	0	0	0
Fluoroglucospora	0	0	0	0	0	0	0	0	0	0
Fluoroglucospora sp.	0	0	0	0	0	0	0	0	0	0
Fusicoccum	0	0	0	0	0	0	0	0	0	0
Fusicoccum sp.	0	0	0	0	0	0	0	0	0	0
Gloeosporium	0	0	0	0	0	0	0	0	0	0
Gloeosporium sp.	0	0	0	0	0	0	0	0	0	0
Hansfordia	0	0	0	0	0	0	0	0	0	0
Hansfordia sp.	0	0	0	0	0	0	0	0	0	0
Hyalobacterium	0	0	0	0	0	0	0	0	0	0
Hyalobacterium sp.	0	0	0	0	0	0	0	0	0	0
Isaria	0	0	0	0	0	0	0	0	0	0
Isaria sp.	0	0	0	0	0	0	0	0	0	0
Myriophellia	0	0	0	0	0	0	0	0	0	0
Myriophellia sp.	0	0	0	0	0	0	0	0	0	0
Myrothecium	0	0	0	0	0	0	0	0	0	0
Myrothecium sp.	0	0	0	0	0	0	0	0	0	0
Nigropora	0	0	0	0	0	0	0	0	0	0
Nigropora sp.	0	0	0	0	0	0	0	0	0	0
Ondularia	0	0	0	0	0	0	0	0	0	0
Ondularia sp.	0	0	0	0	0	0	0	0	0	0
Pezizomyces	0	0	0	0	0	0	0	0	0	0
Pezizomyces sp.	20	10 - 30	10	5 - 15	30	10 - 45	30	10 - 50	20	10 - 50
Phoma	0	0	0	0	0	0	0	0	0	0
Phoma sp.	0	0	0	0	0	0	0	0	0	0
Pirsonia	0	0	0	0	0	0	0	0	0	0
Pirsonia sp.	0	0	0	0	0	0	0	0	0	0
Pteridomyces	0	0	0	0	0	0	0	0	0	0
Pteridomyces sp.	0	0	0	0	0	0	0	0	0	0
Rhinocladiella	0	0	0	0	0	0	0	0	0	0
Rhinocladiella sp.	0	0	0	0	0	0	0	0	0	0
Rhizopus	0	0	0	0	0	0	0	0	0	0
Rhizopus sp.	0	0	0	0	0	0	0	0	0	0
Rhizoglyphus	0	0	0	0	0	0	0	0	0	0
Rhizoglyphus sp.	0	0	0	0	0	0	0	0	0	0
Rhodotorula	0	0	0	0	0	0	0	0	0	0
Rhodotorula rubra	0	0	0	0	0	0	0	0	0	0
Rhodotorula sp.	0	0	0	0	0	0	0	0	0	0
Sporobolus	0	0	0	0	0	0	0	0	0	0
Sporobolus sp.	0	0	0	0	0	0	0	0	0	0
Stachybotrys	0	0	0	0	0	0	0	0	0	0
Stachybotrys sp.	0	0	0	0	0	0	0	0	0	0
Stemphylium	0	0	0	0	0	0	0	0	0	0
Stemphylium sp.	0	0	0	0	0	0	0	0	0	0
Tetrasphaera	0	0	0	0	0	0	0	0	0	0
Tetrasphaera sp.	0	0	0	0	0	0	0	0	0	0
Trichothecium	0	0	0	0	0	0	0	0	0	0
Trichothecium sp.	0	0	0	0	0	0	0	0	0	0
Ulocladium	0	0	0	0	0	0	0	0	0	0
Ulocladium sp.	0	0	0	0	0	0	0	0	0	0
Verticillium	0	0	0	0	0	0	0	0	0	0
Verticillium sp.	0	0	0	0	0	0	0	0	0	0
Volvella	0	0	0	0	0	0	0	0	0	0
Volvella sp.	0	0	0	0	0	0	0	0	0	0
Wallmania	0	0	0	0	0	0	0	0	0	0
Wallmania sebi	0	0	0	0	0	0	0	0	0	0
Undetermined fungi	20	10 - 40	20	10 - 30	0	0 - 0	40	30 - 40	0	0 - 10

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表 11 化学物質濃度

全国	単位: $\mu\text{g}/\text{m}^3$					N=425		
	Median	Min	Max	25% - 75%	Mean	SD	検出率 (%)	
アルデヒド類								
Formaldehyde	40.6	ND	202.8	29.0 - 57.7	45.3	26.8	95.8	
Acetaldehyde	22.3	ND	208.9	13.9 - 35.7	27.4	21.9	96.5	
Acetone	34.9	ND	606.0	23.6 - 55.8	50.4	59.4	97.4	
Acrolein	ND	ND	6.1	ND - ND	0.5	0.3	0.2	
Propionaldehyde	7.8	ND	127.1	4.4 - 14.1	9.8	8.8	92.7	
Crotonaldehyde	4.4	ND	112.5	ND - 9.3	5.6	7.4	58.1	
n-Butyraldehyde	2.4	ND	109.5	1.0 - 6.3	4.5	7.3	76.2	
Benzaldehyde	4.2	ND	117.1	1.2 - 10.4	8.3	12.8	76.9	
iso-Valeraldehyde	2.8	ND	104.6	ND - 8.6	6.6	11.1	57.4	
Valeraldehyde	3.9	ND	223.7	1.2 - 8.8	7.9	16.5	77.4	
Total m,o,p-Tolualdehyde	ND	ND	222.9	ND - 3.1	3.2	11.8	39.1	
Hexaldehyde	9.6	ND	198.5	4.8 - 18.5	14.9	18.0	95.8	
2,5-Dimethylaldehyde	ND	ND	19.6	ND - ND	0.7	1.2	7.5	
Total aldehyde	162.0	7.0	798.6	98.8 - 239.9	185.4	117.2	100.0	
VOC類								
2-Butanone(Ethyl Methyl Ketone)	ND	ND	37.4	ND - 1.5	1.6	2.8	29.4	
Ethyl acetate	ND	ND	313.2	ND - 6.3	9.1	29.7	45.9	
n-Hexane	ND	ND	178.1	ND - ND	1.9	9.6	20.2	
Chloroform	ND	ND	5.9	ND - ND	0.8	0.8	17.2	
2,4-Dimethylpentane	ND	ND	3.8	ND - ND	0.6	0.3	7.3	
1,2-Dichloroethane	ND	ND	9.8	ND - ND	0.6	0.6	4.0	
1,1,1-Trichloroethane	ND	ND	15.6	ND - ND	0.6	0.9	6.4	
n-Butanol	ND	ND	11.5	ND - ND	0.9	1.2	22.4	
Benzene	1.0	ND	21.7	ND - 2.3	1.8	2.2	50.8	
Carbon tetrachloride	ND	ND	1.4	ND - ND	0.5	0.1	2.4	
1,2-Dichloropropane	ND	ND	2.8	ND - ND	0.5	0.1	0.2	
Trichloroethylene	ND	ND	3.8	ND - ND	0.5	0.2	1.4	
n-Heptane	ND	ND	129.6	ND - 2.5	3.0	8.0	41.9	
2-Pentanone(Methylisobutylketone)	ND	ND	32.0	ND - 1.2	1.2	2.1	28.9	
Toluene	13.1	ND	144.2	8.4 - 21.3	17.4	17.0	96.0	
Chlorodibromomethane	ND	ND	6.0	ND - ND	0.5	0.3	1.6	
Butyl acetate	2.6	ND	61.4	ND - 5.0	4.4	6.5	74.8	
n-Octane	ND	ND	45.5	ND - 2.8	2.9	5.5	39.1	
Tetrachloroethylene	ND	ND	167.0	ND - ND	1.2	8.3	6.8	
Ethylbenzene	2.9	ND	24.8	1.6 - 4.6	3.6	3.1	89.2	
Total m,o,p-Xylene	5.8	ND	101.1	2.9 - 11.4	8.4	9.4	90.8	
Styrene	ND	ND	52.7	ND - ND	0.7	2.6	6.4	
n-Nonane	ND	ND	160.0	ND - 4.8	4.7	10.6	48.9	
alpha-Pinene	7.8	ND	1052.7	2.3 - 27.7	31.3	78.6	85.4	
Total Trimethylbenzene	2.7	ND	103.0	ND - 5.9	5.1	8.8	66.1	
n-Decane	ND	ND	84.7	ND - 3.6	3.8	8.1	39.5	
p-Dichlorobenzene	1.8	ND	1689.8	ND - 17.3	46.7	160.9	60.9	
Limonene	8.9	ND	601.6	3.6 - 18.8	20.1	47.5	93.2	
n-Undecane	ND	ND	101.3	ND - 2.2	4.6	11.8	43.1	
Total VOC	112.3	16.0	1770.9	67.8 - 203.6	179.5	209.1	100.0	

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福島 単位: µg/m³ N=65

	Median	Min	Max	25% - 75%	Mean	SD	検出率 (%)
アールキド類							
Formaldehyde	35.9	12.8	107.3	29.0 - 49.8	40.1	15.1	100.0
Acetaldehyde	26.4	10.2	173.8	19.6 - 37.1	31.6	22.4	100.0
Acetone	44.9	17.6	424.0	32.0 - 64.0	60.1	58.2	100.0
Acrolein	ND	ND	ND	ND - ND	ND	0.0	0.0
Propionaldehyde	5.5	ND	20.8	3.4 - 8.8	6.6	4.5	96.9
Crotonaldehyde	ND	ND	112.5	ND - 5.6	4.9	14.1	44.6
n-Butyraldehyde	1.9	ND	57.7	1.4 - 5.0	4.3	7.6	87.7
Benzaldehyde	2.5	ND	40.2	ND - 8.3	4.8	6.1	69.2
iso-Valeraldehyde	ND	ND	36.3	ND - 6.0	3.5	5.5	44.6
Valeraldehyde	3.3	ND	27.4	1.6 - 6.5	5.4	6.1	84.6
Total m.o.p-Tolualdehyde	ND	ND	54.1	ND - 2.6	4.1	9.4	26.2
Hexaldehyde	10.2	ND	63.9	5.2 - 17.3	14.1	13.1	96.9
2,5-Dimethylaldehyde	ND	ND	2.3	ND - ND	0.6	0.3	3.1
Total aldehyde	155.8	31.9	514.5	113.4 - 213.5	180.7	100.8	100.0
VOC類							
2-Butanone(Ethyl Methyl Ketone)	ND	ND	37.4	ND - 5.2	3.6	5.8	47.7
Ethyl acetate	5.8	ND	313.2	ND - 21.5	33.8	66.5	70.8
n-Hexane	ND	ND	178.1	ND - 2.1	4.7	22.0	36.9
Chloroform	ND	ND	3.3	ND - 1.5	1.0	0.8	35.4
2,4-Dimethylpentane	ND	2.0	2.0	ND - ND	0.7	0.5	18.5
1,2-Dichloroethane	ND	ND	2.8	ND - ND	0.6	0.3	3.1
1,1,1-Trichloroethane	ND	ND	1.8	ND - ND	0.5	0.2	4.6
n-Butanol	ND	ND	8.4	ND - 1.5	1.2	1.3	38.5
Benzene	1.1	ND	7.4	ND - 2.5	1.7	1.6	55.4
Carbon tetrachloride	ND	ND	ND	ND - ND	ND	0.0	0.0
1,2-Dichloropropane	ND	ND	ND	ND - ND	ND	0.0	0.0
Trichloroethylene	ND	ND	3.8	ND - ND	0.6	0.5	3.1
n-Heptane	ND	ND	39.9	ND - 3.7	3.6	7.0	47.7
2-Pentanone(Methyl isobutyl ketone)	ND	ND	5.3	ND - ND	0.8	0.9	18.5
Toluene	15.6	ND	87.4	8.0 - 23.1	17.4	13.8	95.4
Chlorodibromomethane	ND	ND	ND	ND - ND	ND	0.0	0.0
Butyl acetate	1.9	ND	12.9	ND - 4.1	2.6	2.6	58.5
n-Octane	ND	ND	37.7	ND - 3.9	4.1	7.4	41.5
Tetrachloroethylene	ND	ND	21.4	ND - ND	0.9	2.7	4.6
Ethylbenzene	2.7	ND	15.7	1.2 - 4.6	3.6	3.5	78.5
Total m.o.p-Xylene	5.9	ND	73.5	2.0 - 11.8	9.3	12.5	80.0
Styrene	ND	ND	2.2	ND - ND	0.5	0.2	3.1
n-Nonane	2.1	ND	57.6	ND - 8.7	7.6	12.2	64.6
alpha-Pinene	10.2	ND	649.1	ND - 54.2	44.6	91.4	67.7
Total Trimethylbenzene	2.8	ND	66.9	ND - 7.6	6.4	9.9	73.8
n-Decane	ND	ND	43.4	ND - ND	3.9	9.2	21.5
p-Dichlorobenzene	3.4	ND	1337.8	ND - 37.9	91.6	220.7	64.6
Limonene	7.9	ND	101.6	1.6 - 20.0	15.3	21.9	78.5
n-Undecane	ND	ND	82.6	ND - 8.4	9.7	18.4	49.2
Total VOC	201.7	16.0	1393.9	97.2 - 324.4	272.3	262.8	100.0

北海道 単位: µg/m³ N=104

	Median	Min	Max	25% - 75%	Mean	SD	検出率 (%)
アールキド類							
Formaldehyde	63.6	22.1	202.8	47.1 - 76.9	65.9	29.6	100.0
Acetaldehyde	33.9	1.7	129.5	24.2 - 46.5	37.9	22.8	100.0
Acetone	42.4	IND	606.0	30.0 - 60.2	55.3	63.6	100.0
Acrolein	ND	ND	ND	ND - ND	ND	0.0	0.0
Propionaldehyde	10.0	2.4	24.8	6.7 - 14.2	10.7	4.9	100.0
Crotonaldehyde	7.9	ND	20.6	5.5 - ND	8.2	3.6	98.1
n-Butyraldehyde	4.3	ND	16.6	2.4 - 6.6	4.7	3.0	96.2
Benzaldehyde	5.9	1.6	117.1	3.6 - 9.9	8.4	11.6	100.0
iso-Valeraldehyde	4.8	1.4	104.6	3.1 - 8.6	7.1	10.4	100.0
Valeraldehyde	7.2	ND	223.7	4.7 - 11.2	10.8	22.1	97.1
Total m.o.p-Tolualdehyde	2.2	ND	21.5	ND - 4.0	3.0	3.3	69.0
Hexaldehyde	17.4	2.0	198.5	9.6 - 29.6	24.0	25.7	100.0
2,5-Dimethylaldehyde	ND	ND	6.9	ND - ND	0.7	0.7	11.5
Total aldehyde	207.6	65.4	798.6	157.4 - 273.5	237.2	114.2	100.0
VOC類							
2-Butanone(Ethyl Methyl Ketone)	ND	ND	ND	ND - ND	ND	0.0	0.0
Ethyl acetate	ND	ND	87.7	ND - 3.7	4.0	10.1	26.0
n-Hexane	ND	ND	31.0	ND - ND	1.4	3.6	10.6
Chloroform	ND	ND	5.0	ND - ND	0.8	0.9	16.3
2,4-Dimethylpentane	ND	ND	3.8	ND - ND	0.6	0.4	4.8
1,2-Dichloroethane	ND	ND	9.8	ND - ND	0.7	1.1	7.7
1,1,1-Trichloroethane	ND	ND	15.6	ND - ND	0.9	1.7	14.4
n-Butanol	ND	ND	11.5	ND - ND	0.9	1.5	11.5
Benzene	1.1	ND	9.2	ND - 2.4	1.8	1.9	51.0
Carbon tetrachloride	ND	ND	1.0	ND - ND	0.5	0.0	1.0
1,2-Dichloropropane	ND	ND	2.8	ND - ND	0.5	0.2	1.0
Trichloroethylene	ND	ND	1.4	ND - ND	0.5	0.1	1.0
n-Heptane	2.4	ND	35.3	ND - 6.3	4.6	6.4	67.3
2-Pentanone(Methyl isobutyl ketone)	ND	ND	32.0	ND - 1.7	1.6	3.3	43.3
Toluene	18.4	ND	144.2	12.0 - 32.4	26.4	26.0	92.3
Chlorodibromomethane	ND	ND	1.9	ND - ND	0.6	0.2	5.8
Butyl acetate	4.9	ND	61.4	2.9 - 9.4	8.6	10.0	93.3
n-Octane	3.5	ND	41.2	1.5 - 8.8	5.9	6.8	79.8
Tetrachloroethylene	ND	ND	167.0	ND - ND	3.0	16.6	18.3
Ethylbenzene	4.6	1.1	21.8	3.1 - 6.7	5.3	3.1	100.0
Total m.o.p-Xylene	11.7	3.1	49.6	8.5 - 15.7	13.0	7.4	100.0
Styrene	ND	ND	4.0	ND - ND	0.7	0.6	13.5
n-Nonane	4.6	ND	34.6	2.0 - 9.4	6.8	6.8	87.5
alpha-Pinene	8.1	ND	302.5	3.7 - 23.3	26.4	51.7	100.0
Total Trimethylbenzene	4.6	ND	28.7	2.9 - 8.5	6.2	5.5	86.0
n-Decane	4.6	1.5	28.7	2.9 - 8.5	6.3	5.4	35.6
p-Dichlorobenzene	ND	ND	56.2	ND - 4.1	3.8	7.5	43.3
Limonene	ND	ND	286.3	ND - 4.4	14.1	44.9	99.0
n-Undecane	ND	ND	89.5	ND - ND	2.4	9.5	18.3
Total VOC	145.1	35.5	775.7	94.7 - 196.0	167.1	111.6	100.0

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分担研究報告書

大阪

単位: µg/m³

25% - 75%

Max

Median

Min

Mean

SD

検出率(%)

N=78

アルキル系	Formaldehyde	Acetaldehyde	Acetone	Acrolein	Propionaldehyde	Crotonaldehyde	n-Butyraldehyde	Benzaldehyde	iso-Valeraldehyde	Valeraldehyde	Total m.o.p-Tolualdehyde	Hexaldehyde	2,5-Dimethylaldehyde	Total aldehyde	VOC類	2-Butanone(Ethyl Methyl Ketone)	Ethyl acetate	n-Hexane	Chloroform	2,4-Dimethylpentane	1,2-Dichloroethane	1,1,1-Trichloroethane	n-Butanol	Benzene	Carbon tetrachloride	1,2-Dichloropropane	Trichloroethylene	n-Heptane	2-Pentanone(Methyl isobutyl ketone)	Toluene	Chlorodibromomethane	Butyl acetate	n-Octane	Tetrachloroethylene	Ethylbenzene	Total m.o.p-Xylene	Styrene	n-Nonane	alpha-Pinene	Total Trimethylbenzene	n-Decane	p-Dichlorobenzene	Limonene	n-Undecane	Total VOC			
	30.0	18.0	27.0	ND	6.6	2.7	2.0	3.2	2.6	3.9	1.8	8.4	ND	121.1	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	ND	8.9	ND	2.4	ND	ND	1.6	3.2	ND	ND	ND	8.4	ND	1.1	5.4	ND	ND	ND	ND	75.1	101.0
	1.6 - 46.8	6.6 - 29.2	13.9 - 44.2	ND - ND	ND - 14.8	ND - 9.1	ND - 6.1	ND - 11.0	ND - 9.9	ND - 11.0	ND - 3.9	4.3 - 16.3	ND - ND	66.1 - 206.5	ND - ND	ND - ND	ND - ND	ND - ND	ND - ND	ND - ND	ND - ND	ND - ND	1.3 - 4.0	ND - ND	ND - ND	ND - ND	ND - ND	5.1 - 14.2	ND - 0.6	ND - ND	1.3 - 4.0	ND - ND	ND - ND	1.1 - 2.7	2.2 - 5.3	ND - ND	ND - ND	2.0 - 31.8	ND - 2.1	ND - ND	2.8 - 12.0	ND - 1.1	47.7 - 114.5	93.2	93.2			
	153.0	83.4	510.1	ND	27.0	16.0	19.5	22.7	22.7	201.2	14.7	104.4	3.9	661.0	5.2	147.4	12.7	4.9	2.0	2.5	2.5	2.6	5.2	1.3	ND	ND	ND	10.7	43.4	ND	48.2	6.2	2.6	15.5	27.4	3.2	3.7	3.2	498.9	6.4	167.2	116.6	6.6	622.4	17.2	101.0		
	31.7	20.1	36.6	ND	8.6	5.1	4.0	6.3	5.6	9.1	2.7	12.9	0.7	144.0	0.8	3.5	0.8	0.9	0.6	0.6	0.6	1.5	0.5	0.5	0.5	0.5	1.4	10.5	0.6	3.4	0.9	0.5	2.1	4.4	0.7	0.6	34.5	1.3	12.7	12.2	0.9	101.0	93.2					
	28.6	17.2	62.6	ND	7.9	4.9	4.4	6.7	6.1	23.2	2.7	15.5	0.6	116.3	0.8	1.5	1.5	1.5	0.4	0.3	0.3	0.4	1.2	0.1	0.1	0.1	2.2	7.9	0.0	5.6	1.2	0.2	2.0	4.2	0.6	0.4	73.8	1.4	25.0	20.5	1.0	93.2	93.2					
	76.9	80.8	87.2	0.0	66.7	56.4	53.8	62.8	61	69.2	51.3	89.7	12.8	100.0	12.8	19.2	9.0	23.1	15.4	15.4	15.4	52.3	38.5	12.3	12.3	12.3	40.0	100.0	12.3	80.0	33.8	15.4	98.5	98.5	12.3	38.5	87.7	81.5	92.3	86.2	100.0	89.2	100.0	100.0	100.0	100.0		

名古屋

単位: µg/m³

25% - 75%

Max

Median

Min

Mean

SD

検出率(%)

N=57

アルキル系	Formaldehyde	Acetaldehyde	Acetone	Acrolein	Propionaldehyde	Crotonaldehyde	n-Butyraldehyde	Benzaldehyde	iso-Valeraldehyde	Valeraldehyde	Total m.o.p-Tolualdehyde	Hexaldehyde	2,5-Dimethylaldehyde	Total aldehyde	VOC類	2-Butanone(Ethyl Methyl Ketone)	Ethyl acetate	n-Hexane	Chloroform	2,4-Dimethylpentane	1,2-Dichloroethane	1,1,1-Trichloroethane	n-Butanol	Benzene	Carbon tetrachloride	1,2-Dichloropropane	Trichloroethylene	n-Heptane	2-Pentanone(Methyl isobutyl ketone)	Toluene	Chlorodibromomethane	Butyl acetate	n-Octane	Tetrachloroethylene	Ethylbenzene	Total m.o.p-Xylene	Styrene	n-Nonane	alpha-Pinene	Total Trimethylbenzene	n-Decane	p-Dichlorobenzene	Limonene	n-Undecane	Total VOC					
	34.2	16.6	21.6	ND	4.7	1.1	1.2	1.2	1.2	1.2	5.0	ND	95.3	2.2	6.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13.5	1.8	ND	1.8	ND	ND	2.9	4.9	ND	ND	8.0	3.0	2.8	7.8	7.5	1.7	119.8	25.9	1527.1	44.3	10.3	249.7	317.0	100.0
	26.6 - 43.5	10.8 - 26.8	15.1 - 31.0	ND - ND	3.4 - 7.0	ND - 1.9	ND - 2.3	ND - 2.3	ND - 2.5	ND - 2.5	3.7 - 11.1	ND - ND	72.2 - 121.3	1.4 - 3.4	3.7 - 12.0	ND - ND	ND - ND	ND - ND	ND - ND	ND - ND	ND - ND	ND - ND	ND - 1.2	ND - 1.2	ND - ND	ND - ND	9.8 - 21.5	1.0 - 1.2	ND - ND	1.0 - 2.8	ND - ND	ND - ND	1.7 - 4.1	2.7 - 10.1	ND - ND	ND - 1.5	2.6 - 34.4	2.1 - 5.2	1.9 - 6.0	1.4 - 77.2	4.4 - 23.1	1.2 - 5.8	7ND - 314.4	6.5	10.3	89.2	100.0			
	76.1	80.0	113.0	ND	36.7	8.4	6.5	44.6	3.4	11.2	11.2	42.5	43.6	100.0	10.0	36.8	7.8	3.0	ND	ND	ND	9.5	3.0	ND	ND	ND	3.2	39.2	ND	9.5	17.5	2.2	12.4	38.7	ND	35.2	1052.7	32.6	28.2	1407.5	108.6	44.3	1527.1	44.3	10.3	249.7	317.0	100.0		
	36.2	22.4	28.1	ND	6.2	0.6	1.5	2.2	0.5	1.9	1.1	8.6	0.5	110.9	2.6	8.6	1.2	0.6	ND	ND	ND	1.3	0.9	ND	ND	ND	16.4	1.0	ND	2.4	1.4	0.6	3.4	7.3	ND	2.7	41.9	5.3	5.4	115.6	18.8	6.5	249.7	10.3	249.7	317.0	100.0			
	12.7	15.9	21.3	0.0	5.1	1.0	1.5	5.7	0.4	2.2	1.6	8.7	0.1	58.0	1.8	7.4	1.5	0.3	0.0	0.0	0.0	1.4	0.7	0.0	0.0	0.0	9.1	1.0	0.0	2.1	2.6	0.3	2.4	7.0	0.0	5.7	138.1	7.0	6.0	271.2	24.6	10.3	249.7	10.3	317.0	100.0				
	100.0	100.0	100.0	0.0	100.0	13.8	63.1	58.5	13.8	60.0	30.8	95.4	13.8	100.0	89.2	96.9	33.8	15.4	12.3	12.3	12.3	52.3	38.5	12.3	12.3	40.0	100.0	12.3	80.0	33.8	15.4	98.5	98.5	12.3	38.5	87.7	81.5	92.3	86.2	100.0	89.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0		

厚生労働科学研究補助金（健康科学総合研究事業）
分担研究報告書

北九州

N = 50

単位: $\mu\text{g}/\text{m}^3$

抽出率 (%)

	Median	Min	Max	25% - 75%	Mean	SD	抽出率 (%)
アルデヒド類							
Formaldehyde	44.7	9.2	164.4	33.1 - 54.8	48.9	26.0	100.0
Acetaldehyde	19.3	2.2	62.0	12.7 - 31.5	23.0	14.3	100.0
Acetone	68.1	ND	337.1	55.6 - 116.9	100.3	80.2	98.0
Acrolein	ND	ND	ND	ND - ND	0.5	0.0	0.0
Propionaldehyde	16.5	8.9	35.4	14.5 - 19.9	17.6	5.3	100.0
Crotonaldehyde	8.2	1.7	26.1	8.9 - 12.9	11.0	4.3	100.0
n-Butyraldehyde	10.8	1.7	26.1	8.9 - 12.9	12.1	15.5	98.0
Benzaldehyde	17.4	4.3	100.3	12.3 - 35.4	25.3	20.2	100.0
iso-Valeraldehyde	14.6	1.9	89.8	7.4 - 28.6	21.1	18.8	100.0
Valeraldehyde	11.8	ND	64.6	6.0 - 22.0	16.0	14.7	90.0
Total m.o.p-Tolualdehyde	ND	ND	222.9	ND - ND	6.4	31.8	8.0
Hexaldehyde	9.2	2.9	108.0	5.7 - 16.9	14.6	17.0	100.0
2,5-Dimethylaldehyde	ND	ND	19.6	ND - ND	1.0	2.7	6.0
Total aldehyde	271.4	166.8	647.8	221.5 - 365.5	298.4	110.4	100.0
VOC類							
2-Butanone(Ethyl Methyl Ketone)	ND	ND	ND	ND - ND	ND	0.0	0.0
Ethyl acetate	ND	ND	36.6	ND - ND	1.9	6.8	4.0
n-Hexane	ND	ND	66.0	ND - ND	1.9	9.3	6.0
Chloroform	ND	ND	2.5	ND - ND	0.6	0.4	6.0
2,4-Dimethylpentane	ND	ND	ND	ND - ND	ND	0.0	0.0
1,2-Dichloroethane	ND	ND	6.5	ND - ND	0.7	0.9	6.0
1,1,1-Trichloroethane	ND	ND	ND	ND - ND	ND	0.0	0.0
n-Butanol	0.8	ND	4.6	ND - 2.1	1.4	1.1	50.0
Benzene	ND	ND	1.4	ND - ND	0.6	0.2	14.0
Carbon tetrachloride	ND	ND	ND	ND - ND	ND	0.0	0.0
1,2-Dichloropropane	ND	ND	ND	ND - ND	ND	0.0	0.0
Trichloroethylene	ND	ND	ND	ND - ND	ND	0.0	0.0
n-Heptane	ND	ND	19.7	ND - 1.3	1.5	3.0	30.0
2-Pentanone(Methylisobutylketone)	ND	ND	7.9	ND - 1.2	1.1	1.3	32.0
Toluene	10.3	4.6	29.6	8.6 - 14.6	11.8	5.6	100.0
Chlorodibromomethane	ND	ND	ND	ND - ND	ND	0.0	0.0
Butyl acetate	2.7	ND	13.0	ND - 5.6	3.7	3.5	70.0
n-Octane	ND	ND	11.7	ND - 1.2	1.4	2.4	26.0
Tetrachloroethylene	ND	ND	4.7	ND - ND	0.6	0.6	4.0
Ethylbenzene	2.5	ND	12.7	1.4 - 4.4	3.3	2.6	86.0
Total m.o.p-Xylene	4.6	ND	32.3	3.0 - 8.0	6.9	6.6	92.0
Styrene	ND	ND	5.5	ND - ND	0.6	0.7	6.0
n-Nonane	ND	ND	22.1	ND - 1.8	2.3	4.0	34.0
alpha-Pinene	5.3	ND	411.4	1.2 - 19.7	27.2	64.9	78.0
Total Trimethylbenzene	ND	ND	36.6	ND - 3.1	2.8	5.8	38.0
n-Decane	0.8	ND	14.9	ND - 3.4	2.6	3.5	50.0
p-Dichlorobenzene	2.8	ND	1689.8	ND - 12.6	87.5	277.8	60.0
Limonene	4.9	ND	371.8	1.2 - 10.5	15.4	52.7	88.0
n-Undecane	ND	ND	49.9	ND - 1.7	4.6	10.7	36.0
Total VOC	91.1	22.1	1770.9	43.0 - 164.7	184.3	292.6	100.0

岡山

N = 71

単位: $\mu\text{g}/\text{m}^3$

抽出率 (%)

	Median	Min	Max	25% - 75%	Mean	SD	抽出率 (%)
アルデヒド類							
Formaldehyde	36.2	12.2	112.4	24.8 - 49.0	39.7	19.9	100.0
Acetaldehyde	15.5	1.3	208.9	11.1 - 24.1	22.9	26.6	100.0
Acetone	27.7	10.8	104.8	19.9 - 36.6	31.7	15.9	100.0
Acrolein	ND	ND	6.1	ND - ND	0.6	0.7	1.4
Propionaldehyde	6.3	ND	127.1	4.2 - 11.9	10.3	15.7	95.8
Crotonaldehyde	ND	ND	29.9	ND - 4.3	3.2	5.5	29.6
n-Butyraldehyde	1.2	ND	12.8	ND - 2.6	2.3	2.7	60.6
Benzaldehyde	1.6	ND	67.8	ND - 5.6	6.1	11.4	69.0
iso-Valeraldehyde	ND	ND	51.8	ND - 2.0	4.1	8.9	26.8
Valeraldehyde	1.3	ND	33.2	ND - 2.9	3.6	6.2	60.6
Total m.o.p-Tolualdehyde	ND	ND	18.9	ND - 2.6	3.0	4.9	29.6
Hexaldehyde	5.0	ND	49.0	2.6 - 12.6	9.8	10.8	93.0
2,5-Dimethylaldehyde	ND	ND	12.6	ND - ND	0.7	1.5	5.6
Total aldehyde	104.8	47.5	397.1	75.3 - 186.2	138.3	83.5	100.0
VOC類							
2-Butanone(Ethyl Methyl Ketone)	ND	ND	13.3	ND - 2.8	2.1	2.6	47.9
Ethyl acetate	2.9	ND	37.2	ND - 6.5	5.4	7.5	70.4
n-Hexane	ND	ND	38.0	ND - 1.9	2.2	5.0	38.0
Chloroform	ND	ND	5.9	ND - ND	0.9	1.1	14.1
2,4-Dimethylpentane	ND	ND	2.9	ND - ND	0.6	0.3	2.8
1,2-Dichloroethane	ND	ND	ND	ND - ND	ND	0.0	0.0
1,1,1-Trichloroethane	ND	ND	1.4	ND - ND	0.5	0.1	4.2
n-Butanol	ND	ND	11.0	ND - 1.5	1.1	1.5	35.2
Benzene	L3	ND	21.7	ND - 4.8	3.2	3.9	56.3
Carbon tetrachloride	ND	ND	ND	ND - ND	ND	0.0	0.0
1,2-Dichloropropane	ND	ND	ND	ND - ND	ND	0.0	0.0
Trichloroethylene	ND	ND	3.3	ND - ND	0.6	0.4	4.2
n-Heptane	ND	ND	129.6	ND - 2.0	4.0	15.7	29.6
2-Pentanone(Methylisobutylketone)	ND	ND	12.1	ND - ND	1.0	1.7	18.3
Toluene	11.4	2.7	100.3	8.1 - 20.3	16.6	14.9	100.0
Chlorodibromomethane	ND	ND	6.0	ND - ND	0.6	0.7	1.4
Butyl acetate	L3	ND	29.2	ND - 3.6	2.8	4.2	56.3
n-Octane	ND	ND	45.5	ND - 1.1	2.1	5.9	26.8
Tetrachloroethylene	ND	ND	1.8	ND - ND	0.5	0.2	2.8
Ethylbenzene	2.3	ND	24.8	1.5 - 4.1	3.2	3.4	85.9
Total m.o.p-Xylene	4.3	ND	101.1	1.5 - 8.2	7.2	13.1	76.1
Styrene	ND	ND	52.7	ND - ND	1.3	6.2	5.6
n-Nonane	ND	ND	160.0	ND - 3.2	6.6	20.0	47.9
alpha-Pinene	6.7	ND	154.7	2.2 - 24.1	16.2	23.2	84.5
Total Trimethylbenzene	3.1	ND	103.0	2.2 - 8.0	7.6	15.4	80.3
n-Decane	2.3	ND	84.7	ND - 6.1	6.5	13.4	100.0
p-Dichlorobenzene	11.3	ND	241.6	1.0 - 12.7	20.2	44.2	76.1
Limonene	L3	ND	601.6	5.2 - 3ND	30.5	73.7	94.4
n-Undecane	L3	ND	101.3	ND - 4.5	5.3	13.5	59.2
Total VOC	97.7	29.5	1147.4	62.6 - 181.9	150.4	167.7	100.0

表 12 指針値超過住宅件数

指針値 ($\mu\text{g}/\text{m}^3$)	全国 (428軒)		北海道 (104軒)		福島 (66軒)		名古屋 (57軒)		大阪 (78軒)		岡山 (71軒)		北九州 (50軒)	
	超過 (%)	超過 (件)	超過 (%)	超過 (件)	超過 (%)	超過 (件)	超過 (%)	超過 (件)	超過 (%)	超過 (件)	超過 (%)	超過 (件)	超過 (%)	超過 (件)
Formaldehyde	15 (3.5)	10 (9.6)	1 (1.5)	0 (0.0)	1 (1.5)	1 (1.3)	1 (1.4)	1 (1.3)	1 (1.3)	1 (1.4)	1 (1.4)	1 (1.4)	2 (4.0)	2 (4.0)
Acetaldehyde	48	24 (23.1)	8 (12.3)	6 (10.5)	5 (6.4)	5 (6.4)	5 (7.0)	4 (8.0)	4 (8.0)	4 (8.0)	4 (8.0)	4 (8.0)	4 (8.0)	4 (8.0)
Toluene	260	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 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Ethylbenzene	3800	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 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Styrene	220	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 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Xylene	870	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 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
p-Dichlorobenzene	240	24 (5.6)	2 (1.9)	8 (14.0)	0 (0.0)	0 (0.0)	1 (1.4)	4 (8.0)	4 (8.0)	4 (8.0)	4 (8.0)	4 (8.0)	4 (8.0)	4 (8.0)
TVOC(暫定目標値)	400	34 (8.0)	4 (3.8)	12 (18.5)	2 (2.6)	3 (4.2)	3 (4.2)	6 (12.0)	6 (12.0)	6 (12.0)	6 (12.0)	6 (12.0)	6 (12.0)	6 (12.0)

表 12 化学物質濃度とシックハウス症状の関連

	SHS1症状あり(N=119)					SHS1症状なし(N=1360)					p		
	Median	Min	Max	25% - 75%	Mean	SD	Median	Min	Max	0.25 - 0.75		Mean	SD
アルデヒド類 VOC類の空气中濃度とSHS1との関係(全国) 単位: $\mu\text{g}/\text{m}^3$ N=1479 (参考値)													
アルデヒド類													
Formaldehyde	44.9	ND	202.8	31.6 - 65.7	51.3	34.6	39.7	ND	202.8	27.5 - 56.8	25.4	0.03	0.026 *
Acetaldehyde	21.7	ND	129.5	14.4 - 33.0	26.9	21.3	22.3	ND	208.9	14.1 - 35.4	20.9	0.90	0.898
Acetone	42.1	ND	606.0	26.8 - 60.7	56.3	73.2	34.5	ND	606.0	23.3 - 54.6	59.7	0.08	0.077
Acrolein	ND	ND	ND	ND - ND	0.5	0.0	ND	ND	6.1	ND - ND	0.2	0.77	0.767
Propionaldehyde	9.1	ND	36.7	5.5 - 13.7	10.1	6.7	7.7	ND	127.1	4.5 - 14.4	9.4	0.28	0.279
Crotonaldehyde	6.4	ND	29.9	ND - 9.6	6.4	5.8	4.2	ND	112.5	ND - 9.2	7.8	0.04	0.043 *
n-Butyraldehyde	3.2	ND	23.3	1.3 - 6.8	5.0	5.0	2.3	ND	109.5	1.0 - 6.3	8.8	0.05	0.053
Benzaldehyde	4.9	ND	100.3	1.6 - 14.9	10.0	14.5	3.8	ND	117.1	1.1 - 10.4	13.1	0.10	0.103
iso-Valeraldehyde	2.9	ND	89.8	ND - 13.4	8.4	12.9	2.8	ND	104.6	ND - 8.3	11.4	0.08	0.084
Valeraldehyde	4.9	ND	223.7	1.5 - 10.5	9.3	21.6	3.8	ND	223.7	1.2 - 8.6	16.2	0.16	0.155
Total m.o.p-Tolualdehyde	ND	ND	31.4	ND - 2.3	2.2	3.9	ND	ND	222.9	ND - 3.1	10.0	0.17	0.165
Hexaldehyde	9.6	ND	108.0	5.6 - 19.9	15.3	16.4	9.8	ND	198.5	4.7 - 18.7	18.5	0.36	0.358
2,5-Dimethylaldehyde	ND	ND	12.6	ND - ND	0.7	1.2	ND	ND	19.6	ND - ND	1.3	0.58	0.579
Total aldehyde	183.0	7.0	798.6	115.3 - 252.5	202.7	130.3	161.5	7.0	798.6	96.9 - 240.0	116.9	0.11	0.107
VOC類													
2-Butanone(Ethyl Methyl Ketone)	ND	ND	37.4	ND - 1.2	1.6	3.8	ND	ND	37.4	ND - 1.6	2.6	0.28	0.275
Ethyl acetate	ND	ND	313.2	ND - 4.9	11.2	40.5	ND	ND	313.2	ND - 6.4	31.6	0.35	0.346
n-Hexane	ND	ND	178.1	ND - ND	3.1	17.3	ND	ND	178.1	ND - ND	7.6	0.98	0.979
Chloroform	ND	ND	4.7	ND - ND	0.7	0.6	ND	ND	5.9	ND - ND	0.8	0.09	0.092
2,4-Dimethylpentane	ND	ND	1.9	ND - ND	0.6	0.2	ND	ND	3.8	ND - ND	0.4	0.20	0.200 **
1,2-Dichloroethane	ND	ND	9.8	ND - ND	1.0	1.8	ND	ND	6.5	ND - ND	0.4	0.00	0.000 **
1,1,1-Trichloroethane	ND	ND	15.6	ND - ND	0.8	1.5	ND	ND	15.6	ND - ND	0.9	0.39	0.388
n-Butanol	ND	ND	11.5	ND - ND	1.0	1.5	ND	ND	11.5	ND - ND	1.2	0.78	0.775
Benzene	1.2	ND	13.8	ND - 2.5	2.1	2.3	1.1	ND	21.7	ND - 2.3	2.1	0.17	0.168
Carbon tetrachloride	ND	ND	1.4	ND - ND	0.5	0.1	ND	ND	1.4	ND - ND	0.1	0.55	0.554
1,2-Dichloropropane	ND	ND	2.8	ND - ND	0.5	0.2	ND	ND	2.8	ND - ND	0.1	0.11	0.107
Trichloroethylene	ND	ND	ND	ND - ND	ND	0.0	ND	ND	3.8	ND - ND	0.3	0.15	0.153
n-Heptane	ND	ND	13.1	ND - 3.7	2.3	3.0	ND	ND	129.6	ND - 2.6	7.3	0.95	0.952
2-Pentanone(Methylisobutylketone)	ND	ND	7.9	ND - 1.5	1.3	1.4	ND	ND	32.0	ND - 1.1	2.3	0.04	0.041
Toluene	13.5	ND	139.8	8.7 - 24.9	18.9	18.6	12.9	ND	144.2	8.2 - 20.3	15.6	0.20	0.195
Chlorodibromomethane	ND	ND	1.9	ND - ND	0.6	0.2	ND	ND	6.0	ND - ND	0.3	0.00	0.000 **
Butyl acetate	2.4	ND	61.4	ND - 5.9	6.2	11.1	2.6	ND	49.3	ND - 4.9	5.7	0.88	0.881
n-Octane	ND	ND	18.3	ND - 3.3	3.2	4.5	ND	ND	45.5	ND - 2.6	5.4	0.16	0.156
Tetrahydroethylene	ND	ND	26.1	ND - ND	1.1	3.4	ND	ND	167.0	ND - ND	8.0	0.99	0.985
Ethylbenzene	3.3	ND	15.1	1.6 - 4.6	3.8	3.2	2.8	ND	24.8	1.6 - 4.5	2.9	0.49	0.494
Total m.o.p-Xylene	5.6	ND	51.3	2.9 - 12.1	9.3	9.7	5.8	ND	101.1	3.0 - 10.8	8.7	0.35	0.347
Styrene	ND	ND	52.7	ND - ND	1.0	4.8	ND	ND	52.7	ND - ND	1.5	0.24	0.242
n-Nonane	1.8	ND	38.3	ND - 6.1	5.7	9.1	ND	ND	160.0	ND - 4.6	9.5	0.03	0.025 *
alpha-Pinene	6.6	ND	266.6	2.8 - 27.5	23.7	46.8	7.7	ND	1052.7	2.3 - 26.8	82.7	0.67	0.667
Total Trimethylbenzene	2.9	ND	79.9	ND - 5.9	6.5	11.6	2.7	ND	103.0	ND - 5.3	7.3	0.57	0.568
n-Decane	ND	ND	56.2	ND - 4.0	4.9	9.7	ND	ND	84.7	ND - 3.2	7.5	0.52	0.523
p-Dichlorobenzene	1.3	ND	1689.8	ND - 10.2	44.9	186.5	1.8	ND	1689.8	ND - 15.1	145.6	0.44	0.437
Limonene	9.4	ND	116.6	4.3 - 27.2	21.5	28.2	9.0	ND	601.6	3.8 - 19.1	48.6	0.25	0.251
n-Undecane	ND	ND	101.3	ND - 2.2	5.9	15.9	ND	ND	101.3	ND - 2.3	11.2	0.96	0.961
TVOC	112.6	27.1	1770.9	67.3 - 218.8	184.6	207.3	108.6	16.0	1770.9	68.3 - 201.6	198.6	0.32	0.322

Mann-Whitney検定

厚生労働科学研究補助金 (健康科学総合研究事業)
分担研究報告書

アルヒド類・VOC類の空气中濃度とSHS2との関係(全国)

単位: $\mu\text{g}/\text{m}^3$ N=1479

	SHS2症状あり(N=267)					SHS2症状なし(N=1212)					Mean	SD	P
	Median	Min	Max	25% - 75%	Mean	SD	Median	Min	Max	0.25 - 0.75			
アルヒド類													
Formaldehyde	44.9	ND	202.8	32.7 - 63.1	50.9	32.3	39.6	ND	202.8	26.8 - 56.0	24.6	0.00	0.000 **
Acetaldehyde	23.8	ND	129.5	15.3 - 36.2	28.3	20.9	22.2	ND	208.9	14.0 - 33.9	21.0	0.23	0.229
Acetone	42.1	ND	606.0	28.2 - 60.7	56.4	70.6	33.4	ND	606.0	23.1 - 54.2	58.5	0.00	0.001 **
Acrolein	ND	ND	ND	ND - ND	ND	0.0	ND	ND	6.1	ND - ND	0.2	0.64	0.639
Propionaldehyde	9.8	ND	36.7	5.5 - 15.2	10.5	6.8	7.5	ND	127.1	4.4 - 14.1	9.6	0.00	0.004 **
Crotonaldehyde	6.6	ND	29.9	ND - 10.5	6.5	5.5	3.6	ND	112.5	ND - 9.0	8.1	0.00	0.000 **
n-Butyraldehyde	3.5	ND	109.5	1.4 - 7.2	5.3	7.8	2.2	ND	109.5	ND - 6.0	8.6	0.00	0.000 **
Benzaldehyde	5.8	ND	100.3	1.6 - 13.6	10.3	13.3	3.6	ND	117.1	ND - 9.9	13.2	0.00	0.000 **
iso-Valeraldehyde	4.5	ND	89.8	ND - 11.8	8.4	11.6	2.5	ND	104.6	ND - 8.0	11.5	0.00	0.000 **
Valeraldehyde	5.0	ND	223.7	1.7 - 12.7	9.3	16.1	3.6	ND	223.7	1.1 - 8.6	16.8	0.00	0.000 **
Total m.o.p-Tolualdehyde	ND	ND	54.1	ND - 3.3	3.3	6.3	ND	ND	222.9	ND - 3.0	10.3	0.17	0.168
Hexaldehyde	10.7	ND	127.3	6.0 - 20.6	17.0	19.4	9.5	ND	198.5	4.6 - 18.1	18.1	0.01	0.008 *
2,5-Dimethylaldehyde	ND	ND	12.6	ND - ND	0.8	1.4	ND	ND	19.6	ND - ND	1.3	0.47	0.465
Total aldehyde	184.7	7.0	798.6	122.8 - 267.1	207.7	125.6	157.1	7.0	798.6	96.2 - 234.1	115.9	0.00	0.000 **
VOC類													
2-Butanone(Ethyl Methyl Ketone)	ND	ND	37.4	ND - ND	1.5	3.6	ND	ND	37.4	ND - 1.9	2.5	0.04	0.036 *
Ethyl acetate	ND	ND	313.2	ND - 6.3	12.4	40.2	ND	ND	313.2	ND - 6.3	30.4	0.80	0.804
n-Hexane	ND	ND	178.1	ND - ND	2.8	15.9	ND	ND	178.1	ND - ND	6.1	0.80	0.798
Chloroform	ND	ND	4.9	ND - ND	0.8	0.8	ND	ND	5.9	ND - ND	0.8	0.55	0.550
2,4-Dimethylpentane	ND	ND	2.0	ND - ND	0.6	0.3	ND	ND	3.8	ND - ND	0.4	0.17	0.171
1,2-Dichloroethane	ND	ND	9.8	ND - ND	0.8	1.2	ND	ND	6.5	ND - ND	0.4	0.00	0.001 **
1,1,1-Trichloroethane	ND	ND	15.6	ND - ND	0.7	1.4	ND	ND	15.6	ND - ND	0.8	0.69	0.690
n-Butanol	ND	ND	11.5	ND - ND	1.0	1.4	ND	ND	11.0	ND - ND	1.1	0.85	0.849
Benzene	1.1	ND	13.8	ND - 2.4	1.9	2.3	1.1	ND	21.7	ND - 2.3	2.1	0.66	0.656
Carbon tetrachloride	ND	ND	1.4	ND - ND	0.5	0.1	ND	ND	1.4	ND - ND	0.1	0.66	0.657
1,2-Dichloropropane	ND	ND	2.8	ND - ND	0.5	0.2	ND	ND	2.8	ND - ND	0.1	0.03	0.028 *
Trichloroethylene	ND	ND	ND	ND - ND	ND	0.0	ND	ND	3.8	ND - ND	0.3	0.02	0.023 *
n-Heptane	ND	ND	35.3	ND - 3.7	2.8	4.8	ND	ND	129.6	ND - 2.6	7.4	0.85	0.849
2-Pentanone(Methylisobutylketone)	ND	ND	32.0	ND - 1.3	1.3	2.3	ND	ND	32.0	ND - 1.1	2.2	0.09	0.091
Toluene	12.9	ND	139.8	8.1 - 21.5	17.1	16.6	12.9	ND	144.2	8.4 - 20.4	15.7	0.89	0.893
Chlorodibromomethane	ND	ND	6.0	ND - ND	0.6	0.4	ND	ND	6.0	ND - ND	0.3	0.00	0.000 **
Butyl acetate	2.5	ND	61.4	ND - 5.7	5.2	8.5	2.6	ND	49.3	ND - 4.9	5.7	0.91	0.912
n-Octane	ND	ND	34.3	ND - 3.2	3.1	4.9	ND	ND	45.5	ND - 2.6	5.5	0.17	0.165
Tetrachloroethylene	ND	ND	167.0	ND - ND	2.8	17.7	ND	ND	26.1	ND - ND	2.0	0.29	0.294
Ethylbenzene	3.0	ND	15.1	1.7 - 4.6	3.8	3.0	2.8	ND	24.8	1.6 - 4.5	2.9	0.12	0.119
Total m.o.p-Xylene	5.6	ND	51.3	3.1 - 11.7	8.9	9.0	5.9	ND	101.1	2.9 - 10.6	8.7	0.21	0.205
Styrene	ND	ND	52.7	ND - ND	0.7	3.2	ND	ND	52.7	ND - ND	1.6	0.21	0.209
n-Nonane	1.6	ND	57.6	ND - 6.7	5.5	9.3	ND	ND	160.0	ND - 4.4	9.5	0.01	0.009 *
alpha-Pinene	7.0	ND	302.5	2.6 - 29.5	27.8	49.8	7.6	ND	1052.7	2.2 - 26.5	85.7	0.42	0.420
Total Trimethylbenzene	2.9	ND	79.9	ND - 5.9	5.9	10.0	2.7	ND	103.0	ND - 5.2	7.2	0.45	0.450
n-Decane	ND	ND	56.2	ND - 3.3	4.7	9.8	ND	ND	84.7	ND - 3.2	7.1	0.23	0.228
p-Dichlorobenzene	1.2	ND	1689.8	ND - 7.8	36.4	142.3	2.0	ND	1689.8	ND - 17.2	150.7	0.01	0.010 *
Limonene	9.2	ND	601.6	4.4 - 23.9	26.0	65.4	9.0	ND	601.6	3.7 - 18.9	42.2	0.33	0.327
n-Undecane	ND	ND	101.3	ND - 1.8	5.8	16.1	ND	ND	101.3	ND - 2.4	10.4	0.24	0.236
TVOC	120.9	22.1	1770.9	67.4 - 211.9	182.8	189.0	108.2	16.0	1770.9	68.3 - 197.3	201.5	0.10	0.101

Mann-Whitney検定

厚生労働科学研究補助金（健康科学総合研究事業）
分担研究報告書

アルデヒド類・VOC類の空气中濃度とSHS1との関係(北海道)

単位: $\mu\text{g}/\text{m}^3$ N=343人

SHS1症状あり(N=34) (参考値) (参考値) SHS1症状なし(N=309) (参考値) (参考値)

アルデヒド類	SHS1症状あり(N=34)					SHS1症状なし(N=309)					P		
	Median	Min	Max	25% - 75%	Mean	SD	Median	Min	Max	25% - 75%		Mean	SD
Formaldehyde	71.0	42.5	202.8	58.9 - 92.6	85.5	42.5	64.0	22.1	202.8	47.9 - 76.1	64.4	27.2	0.001**
Acetaldehyde	33.4	4.6	129.5	24.6 - 46.0	40.9	28.5	33.9	1.7	129.5	24.2 - 48.7	38.9	23.3	0.995
Acetone	51.1	21.7	606.0	33.3 - 80.8	81.5	104.7	42.3	IND	606.0	30.8 - 60.3	54.8	61.8	0.020*
Acrolein	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
Propionaldehyde	11.7	5.1	22.3	7.5 - 13.7	11.7	5.1	9.9	2.4	24.8	6.7 - 14.8	10.7	5.0	0.349
Crotonaldehyde	9.4	2.1	20.6	6.4 - 11.9	9.7	4.0	7.9	ND	20.6	5.4 - 10.6	8.1	3.6	0.024*
n-Butyraldehyde	4.8	1.0	9.4	2.6 - 8.5	5.2	2.7	4.1	ND	16.6	2.5 - 6.7	4.8	3.2	0.277
Benzaldehyde	7.5	1.6	18.5	4.3 - 13.7	8.9	5.6	5.8	1.6	117.1	3.7 - 9.9	8.6	13.2	0.199
iso-Valeraldehyde	6.6	1.4	16.6	3.8 - 11.8	7.7	4.8	4.7	1.4	104.6	3.2 - 8.6	7.4	11.8	0.148
Valeraldehyde	6.5	ND	223.7	5.4 - 13.2	14.8	37.3	7.5	ND	223.7	4.7 - 11.5	11.1	22.2	0.734
Total m,o,p-Tolualdehyde	2.1	ND	13.0	ND - 3.6	3.0	3.0	2.3	ND	21.5	ND - 4.0	3.2	3.5	0.863
Hexaldehyde	19.7	6.2	47.5	11.4 - 35.1	22.8	12.9	17.2	2.0	198.5	10.4 - 29.6	25.3	28.2	0.373
2,5-Dimethylaldehyde	ND	ND	3.0	ND - 0.6	0.8	0.7	ND	ND	6.9	ND - ND	0.7	0.8	0.068
Total aldehyde	236.3	130.2	798.6	184.4 - 321.9	293.3	156.1	208.8	65.4	798.6	162.2 - 277.4	238.6	111.8	0.062
VOC類													
2-Butanone(Ethyl Methyl Ketone)	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
Ethyl acetate	ND	ND	31.5	ND - ND	3.4	7.4	ND	ND	87.7	ND - 3.1	3.6	8.8	0.270
n-Hexane	ND	ND	8.1	ND - ND	0.9	1.5	ND	ND	31.0	ND - ND	1.3	3.5	0.881
Chloroform	ND	ND	4.7	ND - ND	0.8	0.8	ND	ND	5.0	ND - ND	0.8	0.9	0.486
2,4-Dimethylpentane	ND	ND	ND	ND - ND	ND	0.0	ND	ND	3.8	ND - ND	0.6	0.5	0.138
1,2-Dichloroethane	ND	ND	9.8	ND - ND	1.4	2.7	ND	ND	4.0	ND - ND	0.6	0.5	0.079
1,1,1-Trichloroethane	ND	ND	15.6	ND - ND	1.2	2.6	ND	ND	15.6	ND - ND	1.0	1.7	0.455
n-Butanol	ND	ND	11.5	ND - ND	1.1	2.0	ND	ND	11.5	ND - ND	0.9	1.2	0.358
Benzene	1.1	ND	8.5	ND - 3.2	2.3	2.3	1.1	ND	9.2	ND - 2.4	1.8	1.9	0.165
Carbon tetrachloride	ND	ND	1.0	ND - ND	0.5	0.1	ND	ND	1.0	ND - ND	0.5	0.0	0.310
1,2-Dichloropropane	ND	ND	2.8	ND - ND	0.6	0.4	ND	ND	2.8	ND - ND	0.5	0.2	0.173
Trichloroethylene	ND	ND	ND	ND - ND	ND	0.0	ND	ND	1.4	ND - ND	0.5	0.1	0.456
n-Heptane	3.7	ND	13.1	1.6 - 7.8	4.4	3.5	2.3	ND	35.3	ND - 6.2	4.6	6.8	0.110
2-Pentanone(Methylisobutylketone)	1.5	ND	5.7	ND - 3.0	1.9	1.5	ND	ND	32.0	ND - 1.5	1.7	3.7	0.008*
Toluene	26.1	ND	139.8	14.1 - 38.3	29.8	28.4	16.3	ND	144.2	12.2 - 30.9	25.4	24.3	0.159
Chlorobromomethane	ND	ND	1.9	ND - 0.7	0.7	0.4	ND	ND	1.9	ND - ND	0.5	0.2	0.000**
Butyl acetate	5.7	ND	61.4	3.7 - 13.8	12.3	15.2	4.9	ND	49.3	2.9 - 9.3	8.4	9.0	0.190
n-Octane	5.0	ND	18.3	1.5 - 10.7	6.1	4.9	3.4	ND	41.2	1.6 - 7.9	5.7	6.5	0.246
Tetrachloroethylene	ND	ND	26.1	ND - ND	2.3	6.2	ND	ND	167.0	ND - ND	3.0	16.6	0.698
Ethylbenzene	4.5	2.0	15.1	3.4 - 7.1	5.7	3.3	4.6	1.1	21.8	3.1 - 6.7	5.1	2.8	0.448
Total m,o,p-Xylene	12.5	4.8	39.3	10.3 - 18.4	14.6	7.9	11.4	3.1	49.6	8.2 - 15.3	12.5	6.5	0.093
Styrene	ND	ND	1.3	ND - ND	0.6	0.2	ND	ND	4.0	ND - ND	0.7	0.6	0.424
n-Nonane	5.0	ND	34.6	2.8 - 11.0	8.4	8.4	4.4	ND	34.6	2.0 - 8.9	6.2	6.0	0.193
alpha-Pinene	12.9	1.7	266.6	6.2 - 45.2	42.9	69.8	7.8	ND	302.5	3.6 - 22.9	27.5	55.2	0.025*
Total Trimethylbenzene	4.5	ND	28.7	2.4 - 8.3	6.7	6.9	4.5	ND	28.7	2.9 - 8.3	5.8	4.9	0.959
n-Decane	ND	ND	56.2	ND - 5.7	5.5	11.5	ND	ND	56.2	ND - 4.2	3.5	7.1	0.699
p-Dichlorobenzene	ND	ND	18.6	ND - 1.7	2.1	3.8	ND	ND	286.3	ND - 4.3	12.7	38.7	0.198
Limonene	20.2	3.5	74.8	12.2 - 33.4	25.1	17.6	13.0	ND	484.9	7.7 - 20.4	26.6	59.2	0.004**
n-Undecane	ND	ND	89.5	ND - ND	3.5	15.3	ND	ND	89.5	ND - ND	2.3	9.3	0.607
TVOC	180.3	60.9	401.5	111.6 - 218.8	186.3	91.4	140.5	35.5	775.7	95.0 - 187.6	165.2	110.7	0.052

Mann-Whitney検定

厚生労働科学研究補助金（健康科学総合研究事業）
分担研究報告書

単位：μg/m³ N=343人

アルヒド類・VOC類の空气中濃度とSHS2との関係(北海道)

アルヒド類	SHS2症状あり(N=82)						SHS2症状なし(N=281)						p	
	Median	Min	Max	25%	75%	Mean	SD	Median	Min	Max	25%	75%		Mean
Formaldehyde	69.8	22.1	202.8	52.2	85.9	78.1	39.2	63.2	22.1	202.8	46.8	75.7	62.7	24.9
Acetaldehyde	35.9	4.6	129.5	24.7	58.3	43.5	25.6	33.4	1.7	129.5	22.3	47.9	37.7	23.1
Acetone	51.1	20.2	606.0	34.2	80.3	73.8	92.0	38.5	1ND	606.0	28.8	58.6	52.2	56.8
Acrolein	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0
Propionaldehyde	11.7	3.8	22.3	7.1	15.5	11.9	5.1	9.5	2.4	24.8	6.5	14.2	10.4	4.9
Crotonaldehyde	9.6	ND	20.6	6.4	11.8	9.7	4.0	7.5	ND	20.6	4.9	10.3	7.8	3.5
n-Butyraldehyde	4.8	ND	12.8	3.1	7.8	5.3	2.7	3.6	ND	16.6	2.3	6.6	4.7	3.2
Benzaldehyde	7.5	1.6	18.5	5.1	12.4	8.6	4.8	5.5	1.6	117.1	3.6	9.2	8.7	14.2
iso-Valeraldehyde	6.6	1.4	16.6	4.3	10.0	7.3	4.2	4.6	1.4	104.6	3.1	7.9	7.4	12.7
Valeraldehyde	8.0	ND	223.7	5.5	13.3	13.0	24.8	7.3	ND	223.7	4.7	10.2	11.0	23.8
Total m.o.p-Tolualdehyde	2.3	ND	21.5	ND	4.0	3.3	3.6	2.3	ND	21.5	ND	4.0	3.1	3.4
Hexaldehyde	19.9	6.2	127.3	11.4	39.7	28.7	25.5	17.1	2.0	198.5	10.4	28.9	23.8	27.5
2,5-Dimethylaldehyde	ND	ND	3.0	ND	ND	0.7	0.5	ND	ND	6.9	ND	ND	0.7	0.8
Total aldehyde	230.9	107.7	798.6	184.9	337.6	284.6	142.6	207.4	65.4	798.6	155.8	270.7	231.0	105.8
VOC類														
2-Butanone(Ethyl Methyl Ketone)	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0
Ethyl acetate	ND	ND	87.7	ND	4.4	5.4	12.2	ND	ND	87.7	ND	ND	3.0	7.1
n-Hexane	ND	ND	8.1	ND	ND	1.2	2.0	ND	ND	31.0	ND	ND	1.3	3.7
Chloroform	ND	ND	4.7	ND	ND	0.7	0.7	ND	ND	5.0	ND	ND	0.9	1.0
2,4-Dimethylpentane	ND	ND	1.9	ND	ND	0.5	0.2	ND	ND	3.8	ND	ND	0.6	0.5
1,2-Dichloroethane	ND	ND	9.8	ND	ND	0.9	1.8	ND	ND	4.0	ND	ND	0.6	0.5
1,1,1-Trichloroethane	ND	ND	15.6	ND	ND	1.1	2.4	ND	ND	15.6	ND	ND	1.0	1.6
n-Butanol	ND	ND	11.5	ND	ND	1.1	1.9	ND	ND	8.1	ND	ND	0.8	1.0
Benzene	1.1	ND	8.5	ND	2.8	2.2	2.3	1.1	ND	9.2	ND	2.4	1.7	1.8
Carbon tetrachloride	ND	ND	1.0	ND	ND	0.5	0.1	ND	ND	1.0	ND	ND	0.5	0.1
1,2-Dichloropropane	ND	ND	2.8	ND	ND	0.6	0.4	ND	ND	2.8	ND	ND	0.5	0.1
Trichloroethylene	ND	ND	ND	ND	ND	ND	0.0	ND	ND	1.4	ND	ND	0.5	0.1
n-Heptane	2.5	ND	35.3	ND	6.6	4.7	6.0	2.3	ND	35.3	ND	6.2	4.6	6.7
2-Pentanone(Methylisobutylketone)	1.1	ND	32.0	ND	2.0	2.0	3.7	ND	ND	32.0	ND	1.5	1.6	3.5
Toluene	18.8	ND	139.8	8.6	30.2	24.6	25.0	16.7	ND	144.2	12.8	33.0	26.3	24.6
Chlorodibromomethane	ND	ND	1.9	ND	ND	0.6	0.3	ND	ND	1.9	ND	ND	0.5	0.2
Butyl acetate	5.7	ND	61.4	3.5	12.8	9.9	11.4	4.9	ND	49.3	2.8	8.9	8.4	9.2
n-Octane	3.3	ND	19.9	1.5	9.9	5.7	5.4	3.6	ND	41.2	1.6	7.8	5.7	6.6
Tetrachloroethylene	ND	ND	167.0	ND	ND	7.6	31.3	3.6	ND	261.1	ND	ND	1.4	3.7
Ethylbenzene	4.5	1.1	15.1	3.4	7.1	5.4	3.0	4.6	1.1	21.8	3.1	6.7	5.1	2.8
Total m.o.p-Xylene	11.7	3.3	39.3	8.6	16.9	13.6	7.6	11.5	3.1	49.6	8.2	15.5	12.5	6.3
Styrene	ND	ND	2.6	ND	ND	0.6	0.6	ND	ND	4.0	ND	ND	0.7	0.6
n-Nonane	5.2	ND	34.6	2.8	8.9	8.0	8.6	4.4	ND	32.4	1.9	8.9	5.9	5.3
alpha-Pinene	12.3	ND	302.5	5.0	46.8	40.9	68.6	6.9	ND	302.5	3.5	19.2	25.3	52.2
Total Trimethylbenzene	4.3	ND	28.7	2.4	7.8	6.8	7.4	4.6	ND	24.8	2.9	8.5	5.6	4.2
n-Decane	ND	ND	56.2	ND	4.7	6.0	13.0	ND	ND	23.5	ND	4.1	3.0	4.6
p-Dichlorobenzene	ND	ND	254.8	ND	1.8	9.4	40.0	ND	ND	286.3	ND	4.4	12.4	35.8
Limonene	16.5	3.2	484.9	10.2	30.6	38.4	88.5	12.8	ND	267.6	7.4	18.7	22.7	40.9
n-Undecane	ND	ND	89.5	ND	ND	5.3	19.2	ND	ND	34.2	ND	ND	1.5	3.7
TVOC	179.5	45.2	775.7	106.3	219.7	205.2	148.9	131.4	35.5	547.6	95.0	181.6	155.2	89.7

Mann-Whitney検定

厚生労働科学研究補助金（健康科学総合研究事業）
分担研究報告書

アルデヒド類・VOC類の気中濃度とSHS1との関係(福島)

単位: $\mu\text{g}/\text{m}^3$ N=238人

	SHS1症状あり(N=17)					SHS1症状なし(N=221)					Mean	SD	P
	Median	Min	Max	25%	75%	Median	Min	Max	25%	75%			
アルデヒド類													
Formaldehyde	39.7	27.5	57.2	32.3	51.1	35.9	12.8	107.3	27.5	49.4	40.0	15.8	0.384
Acetaldehyde	25.6	16.0	62.6	21.5	33.3	25.8	10.2	173.8	19.5	37.6	30.6	19.5	0.805
Acetone	46.6	22.9	424.0	34.4	68.0	44.9	17.6	424.0	31.6	64.4	63.6	66.9	0.520
Acrolein	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0	1.000
Propionaldehyde	6.8	1.5	20.8	3.9	10.2	5.4	ND	20.8	3.3	8.5	6.4	4.3	0.218
Crotonaldehyde	4.2	ND	16.4	ND	8.2	ND	ND	112.5	ND	5.1	5.0	15.0	0.306
n-Butyraldehyde	1.9	ND	18.3	1.3	6.5	1.9	ND	57.7	1.3	4.8	4.3	8.0	0.626
Benzaldehyde	2.5	ND	40.2	0.8	9.3	2.5	ND	40.2	ND	8.3	4.6	5.4	0.841
iso-Valeraldehyde	1.5	ND	36.3	ND	8.3	ND	ND	36.3	ND	5.8	3.3	4.8	0.569
Valeraldehyde	3.5	ND	27.4	2.1	6.0	3.3	ND	27.4	1.6	6.2	5.3	5.9	0.601
Total m.o.p-Tolualdehyde	ND	ND	7.9	ND	ND	ND	ND	54.1	ND	4.5	4.7	10.1	0.251
Hexaldehyde	IND	5.1	24.7	6.9	16.5	9.2	ND	63.9	4.8	16.5	13.7	13.2	0.452
2,5-Dimethylaldehyde	ND	ND	ND	ND	ND	ND	ND	2.3	ND	ND	0.5	0.3	0.492
Total aldehyde	160.3	92.7	514.5	119.4	226.0	155.8	51.9	514.5	110.7	211.4	182.9	107.6	0.476
VOC類													
2-Butanone(Ethyl Methyl Ketone)	ND	ND	37.4	ND	4.4	ND	ND	37.4	ND	4.9	3.2	4.8	0.631
Ethyl acetate	4.0	ND	313.2	ND	90.4	6.3	ND	313.2	ND	21.2	36.2	68.6	0.803
n-Hexane	ND	ND	178.1	ND	1.9	ND	ND	178.1	ND	2.0	3.5	17.0	0.719
Chloroform	ND	ND	2.1	ND	1.1	ND	ND	3.3	ND	1.5	1.0	0.8	0.290
2,4-Dimethylpentane	ND	ND	1.9	ND	ND	ND	ND	2.0	ND	ND	0.7	0.5	0.840
1,2-Dichloroethane	ND	ND	2.0	ND	ND	ND	ND	2.8	ND	ND	0.6	0.3	0.473
1,1,1-Trichloroethane	ND	ND	1.8	ND	ND	ND	ND	1.8	ND	ND	0.6	0.2	0.971
n-Butanol	ND	ND	3.4	ND	2.1	ND	ND	8.4	ND	1.3	1.2	1.4	0.806
Benzene	ND	ND	5.8	ND	1.9	1.1	ND	7.4	ND	2.8	1.8	1.6	0.643
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0	1.000
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0	1.000
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	3.8	ND	ND	0.6	0.5	0.426
n-Heptane	ND	ND	7.6	ND	5.9	ND	ND	39.9	ND	4.5	3.9	7.1	0.482
2-Pentanone(Methylisobutylketone)	ND	ND	1.1	ND	ND	ND	ND	5.3	ND	ND	0.8	0.9	0.193
Toluene	17.9	ND	51.5	4.7	20.9	15.6	ND	87.4	8.0	23.1	16.9	12.4	0.591
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	0.0	1.000
Butyl acetate	ND	ND	7.6	ND	3.3	1.9	ND	12.9	ND	3.9	2.6	2.5	0.221
n-Octane	ND	ND	12.6	ND	11.3	ND	ND	37.7	ND	3.7	4.4	8.0	0.755
Tetrachloroethylene	ND	ND	7.2	ND	ND	ND	ND	21.4	ND	ND	0.8	2.2	0.790
Ethylbenzene	1.8	ND	9.1	ND	5.3	2.9	ND	15.7	1.5	4.5	3.6	3.4	0.347
Total m.o.p-Xylene	2.0	ND	51.3	ND	15.1	6.3	ND	73.5	2.2	12.3	9.4	12.4	0.300
Styrene	ND	ND	ND	ND	ND	ND	ND	2.2	ND	ND	0.5	0.2	0.426
n-Nonane	2.2	ND	38.3	ND	14.2	2.1	ND	57.6	ND	8.8	7.8	12.3	0.792
alpha-Pinene	6.5	ND	61.4	ND	29.8	9.5	ND	649.1	ND	42.0	44.5	96.1	0.296
Total Trimethylbenzene	ND	ND	66.9	ND	12.9	3.0	ND	66.9	2.0	6.8	6.2	8.8	0.267
n-Decane	ND	ND	30.0	ND	IND5	ND	ND	43.4	ND	ND	3.7	9.1	0.299
p-Dichlorobenzene	1.1	ND	47.2	ND	5.9	3.2	ND	1337.8	ND	31.3	75.3	191.6	0.158
Limonene	4.2	ND	68.3	0.9	9.6	7.3	ND	101.6	1.7	19.9	15.3	22.9	0.313
n-Undecane	ND	ND	77.3	ND	22.7	ND	ND	82.6	ND	8.3	9.3	17.7	0.966
TVOC	201.7	27.1	732.4	66.0	270.8	195.8	16.0	1393.9	96.5	313.2	256.3	246.9	0.480

Mann-Whitney検定

厚生労働科学研究補助金 (健康科学総合研究事業)
分担研究報告書

単位: $\mu\text{g}/\text{m}^3$ N=238人

アルヒド類・VOC類の空气中濃度とSHS2との関係 (福島)

	SHS2症状あり(N=41)					SHS2症状なし(N=197)					Mean	SD	P
	Median	Min	Max	25% - 75%	Mean	SD	Median	Min	Max	25% - 75%			
アルヒド類													
Formaldehyde	39.7	27.5	64.4	33.1 - 51.1	41.3	10.4	35.9	12.8	107.3	27.1 - 49.4	39.8	16.3	0.169
Acetaldehyde	25.6	11.0	62.6	2ND - 35.7	28.5	10.8	26.4	10.2	173.8	19.5 - 37.6	30.9	20.4	0.984
Acetone	46.6	17.6	424.0	34.4 - 68.1	72.9	87.1	44.9	17.6	424.0	30.4 - 64.4	62.3	64.5	0.305
Acrolein	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
Propionaldehyde	5.5	ND	20.8	2.1 - 9.0	6.5	5.0	5.5	ND	20.8	3.4 - 8.6	6.5	4.3	0.675
Crotonaldehyde	ND	ND	16.4	ND - 5.6	3.5	4.3	ND	ND	112.5	ND - 5.2	5.3	15.8	0.874
n-Butyraldehyde	1.9	ND	18.3	1.4 - 5.1	3.9	4.5	1.9	ND	57.7	1.3 - 4.8	4.3	8.4	0.742
Benzaldehyde	2.5	ND	40.2	0.8 - 8.2	5.8	8.9	2.5	ND	40.2	ND - 8.5	4.5	4.9	0.759
iso-Valeraldehyde	ND	ND	36.3	ND - 6.9	4.5	8.1	ND	ND	36.3	ND - 5.8	3.2	4.3	0.792
Valeraldehyde	3.3	ND	27.4	2.3 - 6.2	6.5	7.9	3.3	ND	27.4	1.6 - 6.2	5.1	5.5	0.471
Total m.o.p-Tolualdehyde	ND	ND	54.1	ND - 4.5	4.6	11.7	ND	ND	54.1	ND - 3.2	4.5	9.4	0.781
Hexaldehyde	1ND	2.6	30.3	7.7 - 16.2	12.5	7.1	8.9	ND	63.9	4.7 - 16.8	13.8	13.8	0.221
2,5-Dimethylaldehyde	ND	ND	ND	ND - ND	0.5	0.0	ND	ND	2.3	ND - ND	0.5	0.3	0.259
Total aldehyde	155.8	66.7	514.5	122.8 - 224.9	191.8	107.3	156.5	51.9	514.5	104.9 - 211.4	181.7	107.0	0.545
VOC類													
2-Butanone(Ethyl Methyl Ketone)	1.3	ND	37.4	ND - 6.3	4.5	8.1	ND	ND	37.4	ND - 4.4	3.1	4.4	0.417
Ethyl acetate	4.0	ND	313.2	1.5 - 67.1	51.2	89.0	5.8	ND	313.2	ND - 21.2	34.6	66.4	0.737
n-Hexane	ND	ND	178.1	ND - 2.6	10.3	38.6	ND	ND	178.1	ND - 2.0	2.8	12.9	0.710
Chloroform	ND	ND	2.6	ND - 1.4	0.8	0.6	ND	ND	3.3	ND - 1.6	1.0	0.8	0.190
2,4-Dimethylpentane	ND	ND	2.0	ND - ND	0.7	0.5	ND	ND	2.0	ND - ND	0.7	0.5	0.679
1,2-Dichloroethane	ND	ND	2.8	ND - ND	0.6	0.4	ND	ND	2.8	ND - ND	0.6	0.3	0.423
1,1,1-Trichloroethane	ND	ND	1.8	ND - ND	0.5	0.2	ND	ND	1.8	ND - ND	0.6	0.2	0.316
n-Butanol	ND	ND	4.0	ND - 1.5	1.1	1.1	ND	ND	8.4	ND - 1.3	1.2	1.5	0.942
Benzene	1.4	ND	5.8	ND - 2.0	1.7	1.4	1.1	ND	7.4	ND - 2.8	1.8	1.7	0.567
Carbon tetrachloride	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
1,2-Dichloropropane	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
Trichloroethylene	ND	ND	ND	ND - ND	ND	0.0	ND	ND	3.8	ND - ND	0.6	0.5	0.190
n-Heptane	ND	ND	26.8	ND - 6.1	3.8	5.9	ND	ND	39.9	ND - 3.7	3.8	7.1	0.878
2-Pentanone(Methylisobutylketone)	ND	ND	3.3	ND - ND	0.7	0.7	ND	ND	5.3	ND - ND	0.8	1.0	0.959
Toluene	17.2	ND	51.5	6.5 - 22.1	15.9	10.6	15.6	ND	87.4	8.2 - 23.1	17.1	12.8	0.694
Chlorobromomethane	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	0.5	0.0	1.000
Butyl acetate	ND	ND	8.5	ND - 3.4	2.0	2.2	2.2	ND	12.9	ND - 3.9	2.6	2.5	0.117
n-Octane	ND	ND	34.3	ND - 8.5	4.4	6.7	ND	ND	37.7	ND - 3.5	4.4	8.1	0.855
Tetrachloroethylene	ND	ND	7.2	ND - ND	1.0	1.8	ND	ND	21.4	ND - ND	0.8	2.2	0.087
Ethylbenzene	2.4	ND	13.4	1.3 - 5.5	3.9	3.5	2.9	ND	15.7	1.2 - 4.4	3.5	3.3	0.678
Total m.o.p-Xylene	3.5	ND	51.3	1.7 - 17.6	10.2	12.7	6.6	ND	73.5	2.0 - 11.2	9.2	12.4	0.937
Styrene	ND	ND	ND	ND - ND	0.5	0.0	ND	ND	2.2	ND - ND	0.6	0.3	0.190
n-Nonane	2.2	ND	57.6	ND - 12.0	9.9	14.6	2.1	ND	57.6	ND - 8.6	7.5	11.8	0.838
alpha-Pinene	6.7	ND	186.1	ND - 32.7	27.8	42.9	9.5	ND	649.1	ND - 41.6	45.5	100.2	0.752
Total Trimethylbenzene	3.4	ND	66.9	ND - 11.2	9.4	15.1	2.8	ND	66.9	2.0 - 6.3	5.7	7.8	0.551
n-Decane	ND	ND	40.5	ND - 9.1	6.7	11.3	ND	ND	43.4	ND - ND	3.3	8.7	0.044*
p-Dichlorobenzene	2.0	ND	676.8	ND - 21.0	59.8	158.6	3.2	ND	1337.8	ND - 31.3	74.8	193.0	0.735
Limonene	5.5	ND	101.6	1.4 - 10.1	13.2	22.1	7.3	ND	101.6	1.7 - 20.0	15.5	22.9	0.303
n-Undecane	1.2	ND	77.3	ND - 22.7	13.5	22.0	ND	ND	82.6	ND - 6.8	8.7	16.9	0.578
TVOC	201.7	27.1	1095.5	108.7 - 316.2	256.8	224.6	188.8	16.0	1393.9	96.5 - 292.8	252.4	247.6	0.605

Mann-Whitney検定

厚生労働科学研究補助金（健康科学総合研究事業）
分担研究報告書

アルデヒド類・VOC類の気中濃度とSHS1との関係(名古屋)

単位: $\mu\text{g}/\text{m}^3$ N=191人

	SHS1症状あり(N=18)					SHS1症状なし(N=173)					Mean	SD	p		
	Median	Min	Max	25%	75%	Median	Min	Max	25%	75%					
アルデヒド類															
Formaldehyde	36.4	15.8	55.1	29.6	- SND5	38.6	11.2	33.4	15.8	76.1	26.6	- 45.5	36.5	13.2	0.335
Acetaldehyde	20.0	10.4	80.0	16.3	- 21.3	23.9	17.7	16.2	6.7	80.0	12.0	- 29.6	23.3	16.6	0.387
Acetone	20.2	12.6	60.3	17.7	- 30.1	24.9	12.2	22.7	8.0	113.0	15.5	- 32.9	30.4	23.4	0.785
Acrolein	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0	1.000
Propionaldehyde	5.5	2.2	36.7	3.3	- 7.0	7.3	7.8	4.7	1.4	36.7	3.5	- 7.5	6.6	5.7	0.929
Crotonaldehyde	ND	ND	8.4	ND	ND	0.9	1.9	ND	ND	8.4	ND	ND	0.7	1.2	0.413
n-Butyraldehyde	1.3	ND	6.5	ND	- 1.4	1.4	1.4	1.1	ND	6.5	ND	- 1.9	1.6	1.6	0.939
Benzaldehyde	0.9	ND	2.7	ND	- 1.8	1.2	0.8	1.1	ND	44.6	ND	- 2.4	2.6	6.6	0.351
iso-Valeraldehyde	ND	ND	ND	ND	ND	ND	0.0	ND	ND	3.4	ND	ND	0.6	0.4	0.574
Valeraldehyde	1.6	ND	7.9	ND	- 2.8	1.9	1.8	1.4	ND	11.2	ND	- 2.8	2.0	2.3	0.600
Total n.o.p-Tolualdehyde	ND	ND	3.4	ND	- 0.9	1.0	1.0	ND	ND	9.9	ND	ND	1.3	1.9	0.758
Hexaldehyde	9.6	2.7	34.9	3.8	- 11.1	9.4	7.3	5.6	ND	42.5	3.7	- 12.4	9.1	8.9	0.586
2,5-Dimethylaldehyde	ND	ND	ND	ND	ND	ND	0.0	ND	ND	1.5	ND	ND	0.5	0.1	0.647
Total aldehyde	96.9	67.7	268.3	93.5	- 117.2	112.5	49.6	97.6	43.6	283.6	74.2	- 122.9	116.1	62.3	0.697
VOC類															
2-Butanone(Ethyl Methyl Ketone)	2.2	ND	10.0	1.7	- 3.8	3.1	2.5	2.2	ND	10.0	1.4	- 3.5	2.6	1.7	0.553
Ethyl acetate	5.8	1.8	35.5	3.0	- 12.2	8.5	7.9	6.4	ND	36.8	3.6	- 12.0	8.7	7.2	0.788
n-Hexane	ND	ND	6.2	ND	- 2.6	1.6	1.7	ND	ND	7.8	ND	- 0.9	1.2	1.4	0.161
Chloroform	ND	ND	ND	ND	ND	ND	0.0	ND	ND	3.0	ND	ND	0.6	0.3	0.386
2,4-Dimethylpentane	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0	1.000
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0	1.000
1,1,1-Trichloroethane	ND	ND	4.4	ND	ND	0.7	0.9	ND	ND	4.4	ND	ND	0.6	0.4	0.524
n-Butanol	ND	ND	4.6	ND	- 1.4	1.1	1.1	ND	ND	9.5	ND	- 1.6	1.4	1.6	0.750
Benzene	ND	ND	1.8	ND	- 0.6	0.7	0.4	ND	ND	3.0	ND	- 1.1	0.9	0.7	0.417
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0	1.000
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0	1.000
Trichloroethylene	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0	1.000
n-Heptane	ND	ND	9.7	ND	- 0.7	1.3	2.2	ND	ND	24.2	ND	ND	2.0	4.1	0.821
2-Pentanone(Methylisobutylketone)	ND	ND	2.6	ND	- 1.2	0.8	0.5	ND	ND	5.4	ND	- 1.3	1.1	1.2	0.469
Toluene	13.4	5.4	36.0	10.5	- 23.8	16.8	8.3	13.5	3.3	39.2	9.8	- 22.7	16.6	9.0	0.651
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	0.5	0.0	1.000
Butyl acetate	1.4	ND	4.3	ND	- 2.6	1.8	1.3	1.9	ND	9.5	ND	- 2.7	2.4	2.2	0.444
n-Octane	ND	ND	17.5	ND	- 1.2	2.7	5.4	ND	ND	17.5	ND	ND	1.3	2.3	0.143
Tetrachloroethylene	3.4	1.0	12.4	1.7	- 4.3	4.1	3.6	2.6	ND	12.4	1.8	- 4.4	3.5	2.4	0.675
Ethylbenzene	5.2	2.0	38.7	2.9	- 12.9	9.6	11.5	4.9	ND	38.7	2.8	- 10.2	7.4	6.7	0.833
Total m.o.p-Xylene	ND	ND	ND	ND	ND	ND	0.0	ND	ND	ND	ND	ND	ND	0.0	1.000
Styrene	ND	ND	35.2	ND	- 4.2	5.5	11.1	ND	ND	35.2	ND	- 1.3	2.5	5.0	0.288
n-Nonane	7.2	ND	116.2	3.7	- 34.5	20.8	27.7	9.1	ND	1052.7	2.6	- 34.1	48.8	158.8	0.946
alpha-Pinene	3.3	ND	32.6	ND	- 13.1	8.6	11.7	3.0	ND	32.6	2.1	- 5.7	5.3	6.9	0.703
Total Trimethylbenzene	2.6	ND	28.2	1.6	- 10.0	6.9	9.3	2.9	ND	28.2	2.1	- 6.0	5.5	5.8	0.347
n-Decane	10.0	ND	429.1	1.5	- 83.6	85.7	152.2	7.8	ND	1407.5	1.3	- 44.4	95.8	219.0	0.793
p-Dichlorobenzene	9.2	1.7	108.6	4.3	- 41.2	28.6	35.1	9.5	1.2	108.6	5.0	- 26.8	20.8	25.2	0.641
Limonene	1.5	ND	37.1	0.9	- 8.3	8.3	13.4	1.7	ND	44.3	1.2	- 8.6	7.3	11.3	0.686
n-Undecane	116.2	71.4	470.1	76.6	- 372.3	222.2	157.2	145.0	46.5	1527.1	70.5	- 312.0	240.4	287.8	0.278
TVOC															

Mann-Whitney検定

厚生労働科学研究補助金 (健康科学総合研究事業)
分担研究報告書

アルヒド類・VOC類の空气中濃度とSHS1との関係(大阪)

単位: $\mu\text{g}/\text{m}^3$

N=283人

SHS1症状あり(N=11) SHS1症状なし(N=272)

	SHS1症状あり(N=11)					SHS1症状なし(N=272)							
	Median	Min	Max	25% - 75%	Mean	SD	Median	Min	Max	25% - 75%	Mean	SD	P
アルヒド類													
Formaldehyde	1.1	ND	89.0	ND - 66.5	24.1	34.4	30.1	ND	153.0	1.7 - 46.7	31.5	27.8	0.379
Acetaldehyde	1.3	ND	44.1	ND - 40.0	15.5	18.9	18.1	ND	83.4	7.0 - 28.8	20.3	16.8	0.333
Acetone	ND	ND	85.5	ND - 44.9	18.9	28.7	27.8	ND	510.1	16.7 - 46.1	37.7	60.4	0.038
Acrolein	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
Propionaldehyde	ND	ND	18.8	ND - 17.4	6.7	8.7	6.6	ND	27.0	ND - 14.8	8.8	8.0	0.287
Crotonaldehyde	ND	ND	11.9	ND - 10.7	4.2	5.2	3.0	ND	16.0	ND - 9.1	5.1	5.0	0.410
n-Butyraldehyde	ND	ND	17.3	ND - 8.9	4.4	5.5	1.9	ND	19.5	ND - 6.2	4.0	4.5	0.931
Benzaldehyde	ND	ND	13.1	ND - 9.3	4.3	5.5	3.2	ND	25.2	ND - 11.2	6.4	6.8	0.171
iso-Valeraldehyde	ND	ND	11.8	ND - 8.3	3.9	4.9	2.3	ND	22.7	ND - 10.1	5.7	6.3	0.322
Valeraldehyde	2.4	ND	20.2	ND - 13.8	6.2	7.9	4.3	ND	201.2	ND - 10.8	8.7	21.6	0.710
Total m.o.p-Tolualdehyde	ND	ND	3.9	ND - 3.4	1.6	1.5	1.7	ND	14.7	ND - 3.8	2.5	2.7	0.340
Hexaldehyde	14.9	ND	27.7	1.9 - 22.4	11.9	9.7	8.6	ND	104.4	4.5 - 16.3	12.9	14.8	0.936
2,5-Dimethylaldehyde	ND	ND	1.6	ND - ND	0.6	0.3	ND	ND	3.9	ND - ND	0.7	0.6	0.693
Total aldehyde	24.0	7.0	324.0	9.9 - 267.1	103.3	124.3	128.3	7.0	661.0	68.6 - 206.2	145.1	111.9	0.113
VOC類													
2-Butanone(Ethyl Methyl Ketone)	ND	ND	ND	ND - ND	ND	0.0	ND	ND	5.2	ND - ND	0.8	0.8	0.192
Ethyl acetate	ND	ND	ND	ND - ND	ND	0.0	ND	ND	147.4	ND - ND	3.9	17.9	0.104
n-Hexane	ND	ND	ND	ND - ND	ND	0.0	ND	ND	12.7	ND - ND	0.7	1.1	0.327
Chloroform	ND	ND	2.3	ND - ND	0.7	0.5	ND	ND	4.9	ND - ND	0.9	0.9	0.317
2,4-Dimethylpentane	ND	ND	1.1	ND - ND	0.6	0.2	ND	ND	2.0	ND - ND	0.7	0.4	0.963
1,2-Dichloroethane	ND	ND	1.8	ND - ND	0.7	0.5	ND	ND	2.5	ND - ND	0.6	0.3	0.055
1,1,1-Trichloroethane	ND	ND	1.2	ND - ND	0.6	0.2	ND	ND	4.2	ND - ND	0.6	0.4	0.274
n-Butanol	ND	ND	ND	ND - ND	ND	0.0	ND	ND	2.6	ND - ND	0.6	0.4	0.237
Benzene	2.6	ND	4.2	ND - 4.2	2.3	1.6	1.1	ND	5.2	ND - 2.2	1.5	1.2	0.084
Carbon tetrachloride	ND	ND	ND	ND - ND	ND	0.0	ND	ND	1.3	ND - ND	0.5	0.1	0.591
1,2-Dichloropropane	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
Trichloroethylene	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
n-Heptane	ND	ND	1.0	ND - ND	0.5	0.2	ND	ND	23.1	ND - 1.3	1.7	3.1	0.025*
2-Pentanone(Methyl isobutyl ketone)	1.9	ND	3.5	ND - 2.7	1.8	1.3	ND	ND	10.7	ND - ND	1.4	2.3	0.014*
Toluene	1.9	ND	43.4	9.8 - 14.2	16.3	13.9	8.7	ND	43.4	4.8 - 14.1	10.1	7.3	0.066
Chlorodibromomethane	ND	ND	ND	ND - ND	ND	0.0	ND	ND	ND	ND - ND	ND	0.0	1.000
Butyl acetate	2.3	1.1	48.2	1.3 - 5.0	10.8	18.6	2.4	ND	48.2	1.3 - 3.9	3.2	4.5	0.501
n-Octane	ND	ND	3.8	ND - ND	0.8	1.0	ND	ND	6.2	ND - ND	0.9	1.2	0.777
Tetrachloroethylene	ND	ND	ND	ND - ND	ND	0.0	ND	ND	2.6	ND - ND	0.5	0.3	0.686
Ethylbenzene	1.6	1.0	4.3	1.4 - 1.7	2.0	1.0	1.6	ND	15.5	1.1 - 2.7	2.1	1.9	0.609
Total m.o.p-Xylene	3.3	2.1	8.4	2.9 - 3.6	4.0	2.0	3.2	ND	27.4	2.2 - 5.1	4.5	4.3	0.434
Styrene	ND	ND	ND	ND - ND	ND	0.0	ND	ND	3.2	ND - ND	0.5	0.3	0.497
n-Nonane	ND	ND	ND	ND - ND	ND	0.0	ND	ND	3.7	ND - ND	0.7	0.6	0.274
alpha-Pinene	11.3	1.6	240.7	1.6 - 41.1	34.7	70.0	9.2	ND	498.9	2.1 - 35.7	32.9	63.4	0.779
Total Trimethylbenzene	ND	ND	2.7	ND - ND	0.7	0.7	ND	ND	6.4	ND - 2.1	1.3	1.4	0.160
n-Decane	ND	ND	4.2	ND - ND	1.5	1.5	ND	ND	7.6	ND - ND	0.9	1.3	0.348
p-Dichlorobenzene	5.9	ND	65.9	ND - 35.1	16.8	21.5	1.1	ND	167.2	ND - 13.7	12.3	25.6	0.200
Limonene	13.8	5.4	116.6	9.4 - 110.1	40.2	47.9	5.4	ND	116.6	2.8 - 12.0	11.1	17.0	0.001**
n-Undecane	1.1	ND	1.8	ND - 1.1	0.9	0.4	ND	ND	6.6	ND - 1.1	0.9	1.0	0.166
TVOC	165.6	57.8	283.7	57.8 - 195.5	141.9	74.3	75.7	17.2	622.4	48.7 - 108.6	97.8	83.1	0.032*

Mann-Whitney検定

厚生労働科学研究補助金（健康科学総合研究事業）
分担研究報告書

アルデヒド類・VOC類の気中濃度とSHS1との関係(岡山)

単位: $\mu\text{g}/\text{m}^3$

N=260人

SHS1症状あり(N=17) SHS1症状なし(N=243)

	SHS1症状あり(N=17)				SHS1症状なし(N=243)				Mean	SD	p
	Median	Min	Max	25% - 75%	Median	Min	Max	25% - 75%			
アルデヒド類											
Formaldehyde	39.0	17.2	71.9	28.7 - 54.5	36.6	12.2	112.4	24.9 - 48.0	40.0	20.1	0.412
Acetaldehyde	19.1	1.3	48.5	13.5 - 26.2	15.5	1.3	208.9	12.1 - 25.2	22.7	23.0	0.410
Acetone	28.6	15.7	50.6	24.9 - 34.8	27.7	10.8	104.8	19.9 - 36.1	32.1	17.5	0.696
Acrolein	ND	ND	ND	ND - ND	ND	ND	6.1	ND - ND	0.5	0.4	0.791
Propionaldehyde	6.4	ND	23.5	4.3 - 11.0	6.4	ND	127.1	4.5 - 12.0	11.0	16.6	0.592
Crotonaldehyde	ND	ND	29.9	ND - 4.4	ND	ND	29.9	ND - 2.7	3.2	5.6	0.606
n-Butyraldehyde	1.4	ND	9.5	ND - 2.4	1.1	ND	12.8	ND - 2.1	2.3	2.8	0.442
Benzaldehyde	2.0	ND	67.8	1.1 - 6.4	1.6	ND	67.8	ND - 5.6	6.7	12.8	0.325
iso-Valeraldehyde	ND	ND	51.8	ND - ND	ND	ND	51.8	ND - 2.0	4.7	10.0	0.471
Valeraldehyde	1.5	ND	14.3	ND - 2.3	1.3	ND	33.2	ND - 2.8	3.7	6.3	0.784
Total m.o.p-Tolualdehyde	ND	ND	14.6	ND - 2.0	ND	ND	18.9	ND - 2.6	2.8	4.6	0.958
Hexaldehyde	7.4	1.8	35.7	2.6 - 11.1	4.9	ND	49.0	3.3 - 15.5	10.2	11.0	0.839
2,5-Dimethylaldehyde	ND	ND	12.6	ND - ND	ND	ND	12.6	ND - ND	0.8	1.7	0.944
Total aldehyde	132.6	67.4	288.2	85.4 - 145.2	103.3	47.5	397.1	75.3 - 193.3	141.0	89.2	0.417
VOC類											
2-Butanone(Ethyl Methyl Ketone)	ND	ND	7.4	ND - 2.4	ND	ND	13.3	ND - 2.8	2.2	2.8	0.636
Ethyl acetate	2.5	ND	21.2	1.8 - 8.9	2.9	ND	37.2	ND - 6.5	5.3	7.0	0.574
n-Hexane	ND	ND	7.9	ND - 2.9	ND	ND	38.0	ND - 2.2	2.1	4.2	0.605
Chloroform	ND	ND	4.1	ND - ND	ND	ND	5.9	ND - ND	0.9	1.1	0.238
2,4-Dimethylpentane	ND	ND	1.8	ND - ND	ND	ND	2.9	ND - ND	0.5	0.3	0.496
1,2-Dichloroethane	ND	ND	ND	ND - ND	ND	ND	ND	ND - ND	ND	0.0	1.000
1,1,1-Trichloroethane	ND	ND	ND	ND - ND	ND	ND	1.4	ND - ND	0.5	0.2	0.310
n-Butanol	ND	ND	11.0	ND - 1.9	ND	ND	11.0	ND - 1.2	1.0	1.1	0.311
Benzene	1.8	ND	13.8	ND - 5.9	1.3	ND	21.7	ND - 4.7	3.1	3.7	0.456
Carbon tetrachloride	ND	ND	ND	ND - ND	ND	ND	ND	ND - ND	ND	0.0	1.000
1,2-Dichloropropane	ND	ND	ND	ND - ND	ND	ND	ND	ND - ND	ND	0.0	1.000
Trichloroethylene	ND	ND	ND	ND - ND	ND	ND	3.3	ND - ND	0.6	0.4	0.395
n-Heptane	ND	ND	10.4	ND - 3.7	ND	ND	129.6	ND - 2.0	3.6	12.6	0.368
2-Pentanone(Methylisobutylketone)	ND	ND	ND	ND - ND	ND	ND	12.1	ND - ND	1.1	1.7	0.039
Toluene	11.8	5.2	47.0	8.9 - 20.3	11.0	2.7	100.3	8.1 - 20.3	16.2	13.4	0.547
Chlorobromomethane	ND	ND	ND	ND - ND	ND	ND	6.0	ND - ND	0.6	0.7	0.595
Butyl acetate	1.3	ND	29.2	ND - 4.7	1.3	ND	29.2	ND - 4.2	2.6	3.2	0.824
n-Octane	ND	ND	3.3	ND - 1.8	ND	ND	45.5	ND - 1.1	2.0	5.1	0.869
Tetrachloroethylene	2.3	ND	12.9	1.6 - 4.1	2.2	ND	1.8	ND - ND	0.5	0.2	0.420
Ethylbenzene	5.1	ND	42.5	2.1 - 8.1	4.3	ND	101.1	1.8 - 8.1	3.1	2.9	0.713
Total m.o.p-Xylene	ND	ND	52.7	ND - ND	ND	ND	52.7	ND - ND	0.8	3.4	0.624
Styrene	2.0	ND	34.0	ND - 6.2	6.0	ND	160.0	ND - 3.0	5.5	16.1	0.115
n-Nonane	4.3	1.3	34.4	3.5 - 25.2	4.6	ND	154.7	1.6 - 22.2	15.0	23.7	0.274
alpha-Pinene	3.7	ND	79.9	2.7 - 7.6	3.1	ND	103.0	2.3 - 6.7	6.3	11.4	0.226
Total Trimethylbenzene	1.4	ND	52.3	ND - 4.5	ND	ND	84.7	ND - 6.1	5.6	11.2	0.685
n-Decane	1.3	ND	84.5	0.8 - 17.3	2.3	ND	241.6	1.1 - 9.8	18.0	41.6	0.592
p-Dichlorobenzene	9.0	1.9	103.0	7.0 - 33.9	11.3	ND	601.6	5.4 - 28.7	31.2	78.1	0.875
Limonene	1.1	ND	101.3	ND - 5.5	1.5	ND	101.3	ND - 4.4	4.2	8.8	0.939
n-Undecane	89.9	47.0	585.8	63.3 - 162.0	96.2	29.5	1147.4	64.6 - 177.3	141.0	144.1	0.726
TVOC											

Mann-Whitney検定