

1 Supplementary Information

2 **Table 4** shows a list of substances detected up to the time of completion of the manuscript.
 3 Identifications based on ambient air samples as well as synthetic mixtures. Substances are
 4 separated into six classes (e.g. CFCs and HCFCs, PFCs and HFCs etc.), which are listed in
 5 arbitrary order. Within each class, substances are sorted according to their boiling point (bp)
 6 in [°C]. Chemical sum formula as well as retention time t_R in [min] on the GS GasPro PLOT
 7 column listed in columns two and three. Columns 5 & 6 show analyte residues in [%], ex-
 8 pressed as chromatographic signal area determined in a blank gas measurement relative to a
 9 signal area determined in a preceding 1 L ambient air sample. Blank gas: purified helium 6.0
 10 (Praxair, Germany). “Residue HayeSep D” denotes residues found with HayeSep D as ad-
 11 sorptive material, “Residue Unibeads 1S” shows the same for Unibeads 1S as adsorptive ma-
 12 terial. Substances that are not detected regularly or show poor measurement precision $\geq 10\%$
 13 were excluded from the analysis (“not analysed”; n.a.). If no residue was detected or the de-
 14 tected residue was $\leq 0.01\%$, a “not detected” (n.d.) is assigned to the respective substance.

15 **Table 4.** List of detectable substances and blank residues. Descriptions are given in the text.

Class/Name	Formula	t_R [min]	bp [°C]	Residue HayeSep D	Residue Unibeads 1S
<u>CFCs & HCFCs</u>					
HCFC-22	CHClF ₂	5.20	-41	n.d.	n.d.
CFC-115	CClF ₂ CF ₃	4.48	-39	n.d.	n.d.
CFC-12	CF ₂ Cl ₂	5.02	-30	n.d.	n.d.
HCFC-124	CHF ₂ CF ₂ Cl	6.85	-12	n.d.	n.d.
HCFC-142b	CH ₃ CClF ₂	6.87	-10	n.d.	n.d.
HCFC-31	CH ₂ ClF	6.40	-9	n.a.	n.a.
CFC-114	CClF ₂ CClF ₂	6.67	4	n.d.	n.d.
HCFC-133a	C ₂ H ₂ ClF ₃	7.55	6	n.d.	n.d.
HCFC-21	CHClCl ₂	7.32	9	n.d.	n.d.
CFC-11	CFCl ₃	7.28	24	n.d.	n.d.
HCFC-141b	CH ₃ CCl ₂ F	8.42	32	n.d.	n.d.
HCFC-1121	CHClClFCl	8.05	35	n.a.	n.a.
HCFC-132b	CH ₂ ClCClF ₂	9.08	46	n.d.	n.d.
CFC-113	CCl ₂ FCClF ₂	8.45	48	0.2%	n.d.
HCFC-225ca	CF ₃ CF ₂ CHCl ₂	9.37	51	n.a.	n.a.
HCFC-225cb	CClF ₂ CF ₂ CHClF	9.57	56	n.a.	n.a.

Class/Name	Formula	t_R [min]	bp [°C]	Residue HayeSep D	Residue Unibeads 1S
CFC-112	CFCl ₂ CFCl ₂	10.33	92	n.d.	n.d.
HCFC-131	CCl ₃ CH ₂ F	12.38	103	n.a.	n.a.
<u>PFCs & HFCs</u>					
HFC-23	CHF ₃	3.01	-82	2.6%	n.a.
HFC-41	CH ₃ F	4.38	-78	n.a.	n.a.
HFC-32	CH ₂ F ₂	4.20	-52	n.d.	n.d.
HFC-125	CHF ₂ CF ₃	4.87	-49	0.4%	1.3%
HFC-143a	CH ₃ CF ₃	5.00	-48	n.d.	n.d.
HFC-161	C ₂ H ₅ F	6.85	-38	n.a.	n.a.
PFC-218	C ₃ F ₈	4.02	-37	n.d.	n.d.
PFC-216	C ₃ F ₆	4.58	-30	n.a.	n.a.
HFO-1234yf	CHFCHCF ₃	5.72	-28	6.9%	14.9%
HFC-134a	CH ₂ FCF ₃	5.92	-26	n.d.	n.d.
HFC-152a	CH ₃ CHF ₂	6.53	-25	n.d.	n.d.
HFC-134	CHF ₂ CHF ₂	6.32	-23	1.1%	3.0%
HFC-227ea	CF ₃ CHFCF ₃	6.52	-16	n.d.	n.d.
HFO-1234ze	CHFCHCF ₃	6.27	-16	n.d.	n.d.
PFC-318	c-C ₄ F ₈	5.68	-6	n.d.	n.d.
HFC-236fa	CF ₃ CH ₂ CF ₃	7.22	-1	n.d.	n.d.
HFC-329ccb	C ₄ HF ₉	7.67	15	n.a.	n.a.
HFC-245fa	CF ₃ CH ₂ CHF ₂	7.92	15	n.d.	n.d.
HFO-1233zd	CHClCHCF ₃	7.82	19	n.a.	n.a.
HFC-356mff	C ₄ H ₄ F ₆	8.35	25	n.a.	n.a.
HFC-365mfc	CF ₃ CH ₂ CF ₂ CH ₃	9.27	40	n.a.	n.a.
<u>Halons</u>					
Halon-1301	CBrF ₃	3.87	-58	n.d.	n.d.
Halon-1211	CBrClF ₂	6.32	-4	n.d.	n.d.
Halon-1202	CF ₂ Br ₂	7.45	23	n.a.	n.a.
Halon-2402	CBrF ₂ CBrF ₂	8.53	47	n.d.	n.d.
Halon-2311	CF ₃ CHBrCl	9.30	50	n.a.	n.a.

Class/Name	Formula	t _R [min]	bp [°C]	Residue HayeSep D	Residue Unibeads 1S
<u>Chloro-, Bromo- & Iodocarbons</u>					
Chloromethane	CH ₃ Cl	6.02	-24	0.5%	0.6%
Bromomethane	CH ₃ Br	7.00	4	3.4%	1.8%
Chloroethane	C ₂ H ₅ Cl	7.92	12	25.5%	8.6%
Dichloromethane	CH ₂ Cl ₂	8.17	40	0.4%	0.2%
Iodomethane	CH ₃ I	8.00	42	43.9%	46.2%
Trichloromethane	CHCl ₃	8.92	61	1.4%	0.7%
Bromochloromethane	CH ₂ BrCl	9.03	68	n.d.	n.d.
Methyl chloroform	CH ₃ CCl ₃	9.93	74	n.d.	n.d.
Tetrachloromethane	CCl ₄	9.08	77	1.1%	n.d.
Trichloroethene	C ₂ HCl ₃	9.55	87	n.d.	n.d.
Bromodichloromethane	CHBrCl ₂	10.10	90	n.d.	n.d.
Dibromomethane	CH ₂ Br ₂	10.03	96	n.d.	n.d.
Dibromochloromethane	CHBr ₂ Cl	11.53	119	n.d.	n.d.
Tetrachloroethene	C ₂ Cl ₄	10.62	121	23.9%	5.2%
Tribromomethane	CHBr ₃	13.50	147	11.2%	n.d.
Diiodomethane	CH ₂ I ₂	15.00	181	n.a.	n.a.
<u>Sulfur-containing and other halogenated compounds</u>					
Sulfuryldifluoride	SO ₂ F ₂	4.20	-55	n.d.	n.d.
Carbonyl sulfide	COS	3.77	-50	0.4%	0.1%
Chlorotrifluoroethylene	C ₂ F ₃ Cl	4.92	-28	n.a.	n.a.
Perfluorotetrahydrofuran	C ₄ F ₈ O	5.87	2	n.a.	n.a.
3-chloropentafluoropropene	CF ₂ CF ₂ CF ₂ Cl	8.07	8	n.d.	7.6%
Desflurane	CF ₃ CHFOCHF ₂	8.42	24	n.a.	n.a.
Carbon disulfide	CS ₂	6.54	46	4.0%	0.8%
Isoflurane	CHF ₂ OCHClCF ₃	9.83	49	n.a.	n.a.
Sevoflurane	CF ₃ CF ₃ CHOCH ₂ F	10.35	59	n.a.	n.a.

Class/Name	Formula	t _R [min]	bp [°C]	Residue HayeSep D	Residue Unibeads 1S
<u>Hydrocarbons and Aldehydes</u>					
Ethyne	C ₂ H ₂	3.75	-81	0.3%	1.4%
Propene	C ₃ H ₆	5.38	-48	35.2%	28.5%
n-propane	C ₃ H ₈	4.09	-42	0.4%	0.1%
Propyne	C ₃ H ₄	7.17	-23	n.d.	n.d.
Formaldehyde	CH ₂ O	7.62	-19	n.a.	n.a.
Isobutane	C ₄ H ₁₀	5.79	-13	0.7%	1.0%
Isobutene	C ₄ H ₈	7.32	-7	n.d.	75.3%
1-butene	C ₄ H ₈	7.38	-6	n.a.	n.a.
1,3-butadiene	C ₄ H ₆	7.32	-4	n.a.	n.a.
n-butane	C ₄ H ₁₀	6.05	-1	0.3%	0.1%
trans-2-butene	C ₄ H ₈	7.02	1	25.3%	19.8%
cis-2-butene	C ₄ H ₈	7.24	4	n.a.	n.a.
Acetaldehyde	C ₂ H ₄ O	11.26	20	99.2%	82.0%
2-methylbutane	C ₅ H ₁₀	7.40	28	0.4%	0.2%
Isoprene	C ₅ H ₈	8.67	34	n.a.	n.a.
n-pentane	C ₅ H ₁₂	7.57	36	0.7%	0.3%
trans-2-pentene	C ₅ H ₁₀	8.47	36	n.d.	22.2%
cis-2-pentene	C ₅ H ₁₀	8.56	37	n.a.	n.a.
2-methylpentane	C ₆ H ₁₄	8.61	60	0.8%	1.0%
3-methylpentane	C ₆ H ₁₄	8.71	63	1.8%	n.d.
n-hexane	C ₆ H ₁₄	8.71	68	1.5%	n.d.
Benzene	C ₆ H ₆	11.00	80	2.5%	5.2%
Cyclohexane	c-C ₆ H ₁₂	8.82	81	n.d.	n.d.
n-heptane	C ₇ H ₁₆	10.06	98	23.1%	4.0%
Toluene	C ₇ H ₈	14.52	111	17.4%	9.8%

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