Human Indoor Exposure to Airborne Halogenated Flame Retardants: Influence of Airborne Particle Size

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Table S1, HFR nomenclature, octanol air partitioning coefficients (K_{oa})*, digestive tract bioaccessibility† and air particle sorption models‡.

Analyte	CAS#	Compound	log K_{oa}*	Digestive tract bioaccessibility fraction, *(fd)* (mean, n=17†)	Fraction sorbed to airborne particles (phi), models‡		
					K_{oa}‡	MacKay ‡	Junge-Pankow ‡
BDE-47	5436-43-1	2, 2′, 4, 4′-tetrabromodiphenyl ether	10.53	0.73	0.533	0.34	0.4
BDE-85	182346-21-0	2, 2′, 3, 4, 4′-pentabromodiphenyl ether	11.66	0.63	0.873	0.756	0.9
BDE-99	60348-60-9	2, 2′, 4, 4′, 5-pentabromodiphenyl ether	11.31	0.65	0.983	0.963	0.8
BDE-100	189084-64-8	2, 2′, 4, 4′, 6-pentabromodiphenyl ether	11.977	0.63	0.625	0.429	0.949
BDE-153	68631-49-2	2, 2′, 4, 4′, 5, 5′-hexabromodiphenyl ether	12.15	0.55	0.906	0.814	0.965
TBB (EH-TBB)	183658-27-7	2-ethylhexyl 2, 3, 4, 5-tetrabromobenzoate	12.335	0.49	0.581	0.385	0.977
TBPH (BEH-TEBP)	26040-51-7	2-ethylhexyl 2, 3, 4, 5-tetrabromophthalate	16.864	0.26	0.999	0.997	1
TCEP	115-96-8	tris (2-chloroethyl) phosphate	5.311	0.80	2.94E-05	1.33E-05	4.02E-06
TCPP (TCIPP)	13674-84-5	tris (1-chloro-2-propyl) phosphate	8.203	0.81	0.0309	0.0142	0.00312
TDCPP (TDCIPP)	13674-87-8	tris (1,3-dichloro-2-propyl) phosphate	10.622	0.83	0.858	0.732	0.451

*,‡ USEPA's EPI Suite (EPIWEB 4.1), Sorption to Aerosols (25 deg C) (AEROWIN V1.00)

†Mean (n=17) digestive tract bioaccessibility values from: Fang M. and Stapleton, H. M. 2014 Evaluating the bioaccessibility of flame retardants in house dust using an In vitro tenax bead-assisted sorptive physiologically based method. Environ. Sci. Technol. 48, 13323 -13330.

Table S2, HFR corresponding chronic oral reference dose (*RfD*) values, ng kg^{-1} d^{-1}

Analyte	*RfD*	Reference
2, 2′, 4, 4′-tetrabromodiphenyl ether (BDE-47)	†100	†USEPA, 2014b, Technical Fact Sheet – PBDEs and PBBs ‡ Winter-Sorkina et al., 2006 RIVM-report 320100002
2, 2′, 4, 4′, 5-pentabromodiphenyl ether (BDE-99)	†100, (‡0.26)	
2, 2′, 4, 4′, 5, 5′-hexabromodiphenyl ether (BDE-153)	†200	
2-ethylhexyl 2, 3, 4, 5-tetrabromobenzoate (TBB or EH-TBB)	*20,000	*Hardy et al., Environ. Sci. Technol. 42 (2008) 9453 -9454

2-ethylhexyl 2, 3, 4, 5-tetrabromophthalate (TBPH or BEH-TEBP)	[*]20,000	
tris (2-chloroethyl) phosphate (TCEP)	[ǂ]22,000	
tris (1-chloro-2-propyl) phosphate (TCPP or TCiPP)	[ǂ]80,000	[ǂ]N. Ali et al., Chemosphere 88 (2012) 1276 -1282
tris (1,3-dichloro-2-propyl) phosphate (TDCPP or TDCIPP)	[ǂ]15,000	

[†] USEPA, 2014b, Technical Fact Sheet – Polybrominated Diphenyl Ethers (PBDEs) and Polybrominated Biphenyls (PBBs) United States Environmental Protection Agency, Washington, D.C., United States https://www.epa.gov/sites/production/files/2014-03/documents/ffrrofactsheet_contaminant_perchlorate_january2014_final_0.pdf (accessed March, 2017)

[ǂ] Winter-Sorkina, R. D., Bakker, M. I., Wolterink, G., Zeilmaker, M. J., 2006. Brominated flame retardants; occurrence, dietary intake and risk assessment, Dutch National Institute for Public Health and the Environment (RIVM), RIVM-report 320100002.

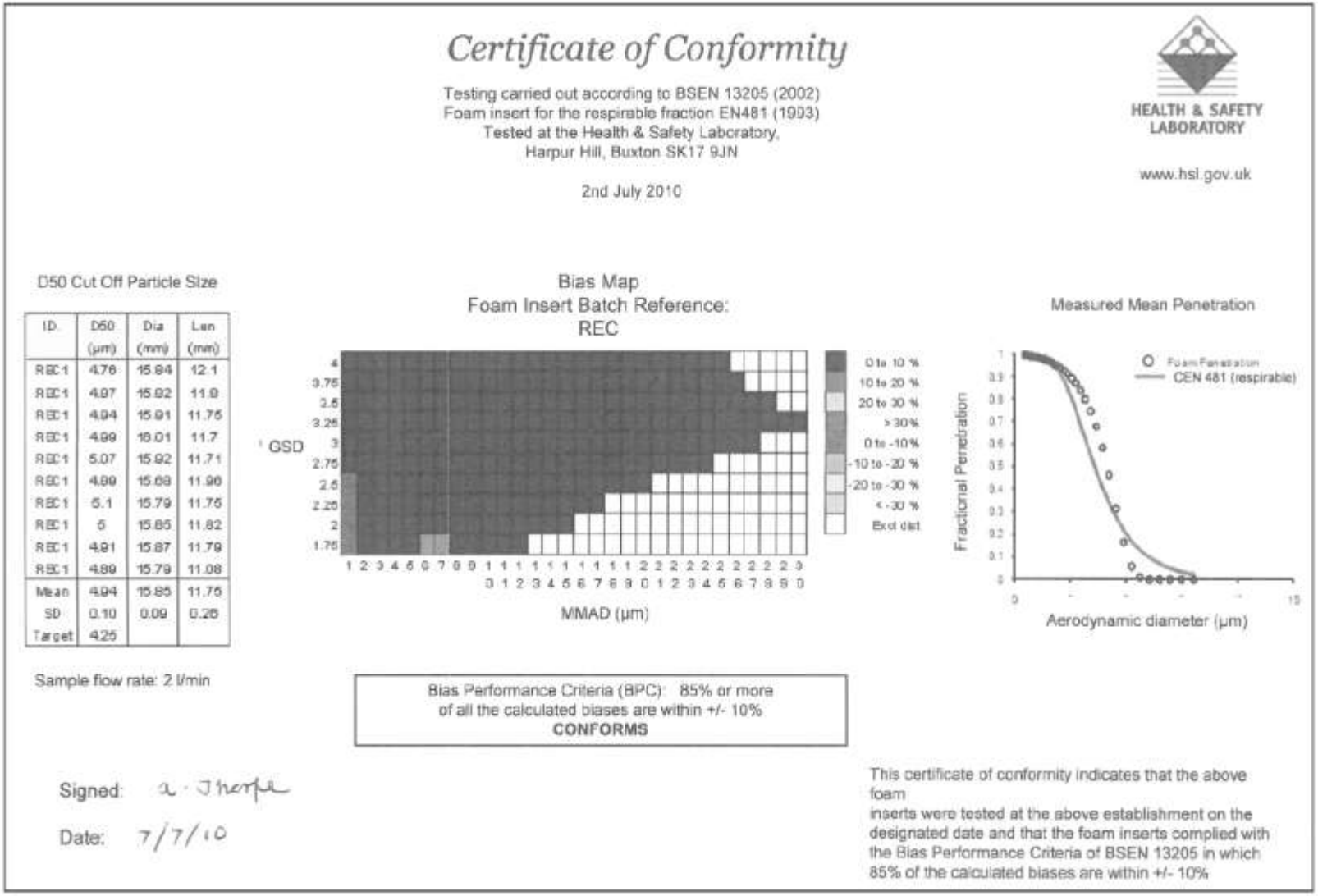

Figure S1, MultiDust® foam disc Certificate of Conformity, performance criteria 85%, ±10 %.