

Human biomonitoring (HBM) values derived by the Human Biomonitoring Commission of the German Environment Agency, status june 2023

Analyte and sample material	Population group	HBM-I value	HBM-II value	Further information
Lead in whole blood [1996, 2002, 2009]		suspended	suspended	
Cadmium in urine [1998, 2011]	Children and adolescents; Adults	0.5 µg/l; 1 µg/l	2 µg/l; 4 µg/l	
Mercury in urine [1999]	General population	7 µg/l; 5 µg/g crea.	25 µg/l; 20 µg/g Krea.	
Mercury in whole blood [1999]	General population - derived for women of childbearing age. The application is also recommended to the other population groups	5 µg/l	15 µg/l	
Thallium in urine [2011]	General population	5 µg/l	/	
Pentachlorophenol (PCP) in serum [1997]	General population	40 µg/l	70 µg/l	
Pentachlorophenol (PCP) in urine [1997]	General population	25 µg/l; 20 µg/g crea.	40 µg/l; 30 µg/g crea.	
Σ DEHP metabolites 5 oxo- and 5 OH-MEHP in urine [2007]	Women of childbearing age; remaining population	200 µg/l*; 500 µg/l*	/	
Bisphenol A in urine [2012, updated 2015]		under revision		
Σ PCB (138 + 153 + 180) in serum x 2 [2012]	Infants, young children and women of childbearing age	3.5 µg/l	7 µg/l	
Glycol ethers, which are metabolized to 2-Methoxyacetic acid (MAA), urine [2014]	General population	0.4 mg MAA/g creatinine	1.6 mg MAA/g creatinine	
Glycol ethers, which are metabolized to 2-Ethoxyacetic acid (EAA), urine [2016]	Adults	5 mg EAA/l	/	
Σ DINCH® metabolites OH-MINCH and cx-MINCH in urine [2014]	General population	3 mg/l*	/	
Σ DPHP metabolites OH-MPHP and oxo-MPHP in urine [2015]	General population	1 mg/l*	/	
Hexabromocyclododecane (HBCD(D)) [2015]	General population	0.3 µg/g fat (1.6 µg/l plasma)	/	

Triclosan in urine [2015]	General population	2 mg/l*	/	Possible sensitization not considered
2-Mercaptobenzothiazole (2-MBT) in urine [2015]	General population	4.5 mg/l*	/	
Σ N-methyl-2-pyrrolidone (NMP) metabolites 5-HNMP and 2-HMSI in urine [2015]	General population	10 mg/l*	30 mg/l*	
Σ N-ethyl-2-pyrrolidone (NEP) metabolites 5-HNEP and 2-HESI in urine [2015]	General population	10 mg/l*	25 mg/l*	
Σ 3-(4-methylbenzylidene) camphor (4-MBC) metabolites 3-4CBHC and 3-4CBC in urine [2016]	General population	0.3 mg/l*	/	
DEHTP metabolite 5cx-MEPTP in urine [2016]	General population	1.8 mg/l*		Possible skin sensitization not considered
PFOA in blood plasma [2016, 2020]	General population Women of childbearing age	2 µg/l	10 µg/l 5 µg/l	
PFOS in blood plasma [2016, 2020]	General population Women of childbearing age	5 µg/l	20 µg/l 10 µg/l	
7-Hydroxycitronellal, metabolite 7-hydroxycitronellylic acid in urine [2018]	General population	9 mg/l*		
Butylhydroxytoluene, metabolite BHT acid in urine [2022]	Adults	124 µg/l*		
Deltamethrin, metabolite DBCA in urine [2022]	General population	90 µg/l*		
(β-)Cyfluthrin, metabolite FPBA in urine [2022]	General population	80 µg/l*		
Octisalate (2-ethylhexyl salicylate, EHS), metabolite 5OH-EHS or 5cx-EPS in urine [2023]	General population	8 µg/l* oder µg/l*	7	

Diethylhexyladipate (DEHA), metabolite 5cx-MEPA in urine [2023]	General population	16 µg/l	
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* A simple toxicokinetic model, the mass balance approach assuming steady-state, was used to calculate the HBM values. Here, among other things, the body weight-related urine volume per day is included in the calculation of the HBM values. According to more recent data, urine volumes per day for adults have increased over time, so the previously published HBM values for adults had to be updated due to the adjustment of the outdated value from 0.02 l urine/kg bw x d to 0.03 l urine/kg bw x d. For children, no new data are available yet, so 0.03 l urine/kg bw x d is still expected. Thus, there is now only one HBM value for the labeled substances for the general population and no longer a differentiation between children and adults. A corresponding justification for the change in the basis of calculation will be published separately.