

Reference values

for arsenic (As), antimony (Sb) and metals (Pb, Cd, Hg, Ni, Tl, U, Pt,) in blood or urine

Parameter and Matrix [bibliographical data]	Population group / period of life	Year of the study	Reference value ^a
Antimony in urine [2009]	Children (3 to 14 years) ¹	2003-2006	0.3 µg/l
Arsenic in urine [2003, 2009]	Children (3 to 14 years) without fish consumption 48 hours before sample collection ¹	2003-2006	15.0 µg/l
	Adults (18 to 69 years) without fish consumption 48 hours before sample collection ²	1997-1999	
Lead in blood [1996, 2003, 2009]	Children (3 to 14 years) ¹	2003-2006	35 µg/l
	Females (18 to 69 years)	1997-1999	70 µg/l
	Males (18 to 69 years) ²	1997-1999	90 µg/l
Cadmium in urine [1998, 2003, 2009]	Non-smoking children (3 to 14 years) ¹	2003-2006	0.2 µg/l
	Non-smoking adults (18 to 69 years) ²	1997-1999	0.8 µg/l
Cadmium in blood [1998, 2003, 2009]	Non-smoking children (3 to 14 years) ¹	2003-2006	<0.3 µg/l ^b
	Non-smoking adults (18 to 69 years) ²	1997-1999	1.0 µg/l
Mercury in urine [1999, 2003, 2009]	Children (3 to 14 years) without amalgam fillings ¹	2003-2006	0.4 µg/l
	Adults (18 to 69 years) without amalgam fillings ²	1997-1999	1.0 µg/l
Mercury in blood [1999, 2003, 2009]	Children (3 to 14 years), fish consumption ≤ 3 times per month ¹	2003-2006	0.8 µg/l
	Adults (18 to 69 years) fish consumption < 3 times per month ²	1997-1999	2.0 µg/l
Nickel in urine [2001, 2009]	Children (3 to 14 years) ¹	2003-2006	4,5 µg/l
	Adults (but not a strictly representative reference sample) ³		3 µg/l
Platinum in urine [2003]	Adults (18 to 69 years) without teeth with dental inlays, crowns, bridge elements of precious metal ²	1997-1999	10 ng/l
Thallium in urine [2009]	Children (3 to 14 years) ¹	2003-2006	0.6 µg/l
Uranium in urine [2005, 2009]	Children (3 to 14 years) ¹	2003-2006	40 ng/l
	Adults (but not a strictly representative reference sample) ³	2001-2003	30-60 ng/l^c

[xy] bibliographical data publication: <http://www.uba.de/gesundheit-e/publikationen/index.htm#khhb>

^a when applying reference values the analytical uncertainty must be taken into account;

^b no reference value, but should there be analytically reliable and confirmed concentrations above the level of 0.3 µg/l a special exposure must be expected;

^c background exposure level for orientation purposes for as long as no data are available from representative population sample;

¹ Source: German Environmental Survey on Children 2003-2006 (GerES IV);

² Source: German Environmental Survey 1998 (GerES III);

³ Source: based on published data.