

**Reference values**  
for metabolites of:  
**organophosphorus (DMP, DMTP, DEP),**  
**pyrethroid (*cis*-Cl<sub>2</sub>CA, *trans*-Cl<sub>2</sub>CA, 3-PBA)**

Parameter and Matrix [bibliographical data]	Population group / period of life	Year of the study	Reference value <sup>a</sup>
<b>DMP in urine</b> [2003, 2009]	Children ( 3 to 14 years) <sup>1</sup>	2003-2006	<b>75 µg/l</b>
	General population (but not a strictly representative reference sample) <sup>2</sup>	1998	<b>135 µg/l</b>
<b>DMTP in urine</b> [2003, 2009]	Children ( 3 to 14 years) <sup>1</sup>	2003-2006	<b>100 µg/l</b>
	General population (but not a strictly representative reference sample) <sup>2</sup>	1998	<b>160 µg/l</b>
<b>DMDTP in urine</b> [2003, 2009]	Children ( 3 to 14 years) <sup>1</sup>	2003-2006	<b>10 µg/l</b>
<b>DEP in urine</b> [2003, 2009]	Children ( 3 to 14 years) <sup>1</sup>	2003-2006	<b>30 µg/l</b>
	General population (but not a strictly representative reference sample) <sup>3</sup>	1998	<b>16 µg/l</b>
<b>DETP in urine</b> [2003, 2009]	Children ( 3 to 14 years) <sup>1</sup>	2003-2006	<b>10 µg/l</b>
<b><i>cis</i>-Cl<sub>2</sub>CA in urine</b> [2005, 2009]	Children ( 3 to 14 years) <sup>1</sup>	2003-2006	<b>1 µg/l</b>
	General population (but not a strictly representative reference sample) <sup>2</sup>	1998	
<b><i>trans</i>-Cl<sub>2</sub>CA in urine</b> [2005, 2009]	Children ( 3 to 14 years) <sup>1</sup>	2003-2006	<b>2 µg/l</b>
	General population (but not a strictly representative reference sample) <sup>2</sup>	1998	
<b>3-PBA in urine</b> [2005, 2009]	Children ( 3 to 14 years) <sup>1</sup>	2003-2006	<b>2 µg/l</b>
	General population (but not a strictly representative reference sample) <sup>3</sup>		

[xy] bibliographical data see [publication: http://www.uba.de/gesundheits-e/publikationen/index.htm#khh](http://www.uba.de/gesundheits-e/publikationen/index.htm#khh)

<sup>a</sup>: when applying reference values the analytical uncertainty must be taken into account;

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

<sup>2</sup> Source: Health offices, Frankfurt am Main;

<sup>3</sup> Source: based on published data

DMP: dimethylphosphate, DMTP: dimethylthiophosphate, DMDTP: dimethyldithiophosphate, DEP: diethylphosphate, DETP: diethylthiophosphate,  
*cis*-Cl<sub>2</sub>CA and *trans*-Cl<sub>2</sub>CA: *cis*- and *trans*-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylic acid, 3-PBA: 3-phenoxybenzoic acid