

Biomonitoring

Perchlorate

Table B13. Perchlorate in women ages 16 to 49 years: Median and 95th percentile concentrations in urine, 2001-2014

Concentration of perchlorate in urine (µg/L)							
	2001- 2002	2003- 2004	2005- 2006	2007- 2008	2009- 2010	2011- 2012	2013- 2014
Median	3.3	2.9	3.2	3.4	2.9	2.4	2.6
95th percentile	15.0	NA**	13.0	16.5	12.4	10.9	10.1

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Environmental Health, National Health and Nutrition Examination Survey

NOTES:

- To reflect exposures to women who are pregnant or may become pregnant, the estimates are adjusted for the probability (by age and race/ethnicity) that a woman gives birth. The intent of this adjustment is to approximate the distribution of exposure to pregnant women. Results will therefore differ from a characterization of exposure to adult women without consideration of birth rates.
- Perchlorate does not appear to accumulate in bodily tissues; thus, the distribution of NHANES urinary perchlorate levels may overestimate high-end exposures as a result of collecting one-time urine samples rather than collecting urine for a longer time period.^{6,7,9}

** Not available. The estimate is not reported because it has large uncertainty: the relative standard error, RSE, is 40% or greater (RSE = standard error divided by the estimate), or the RSE cannot be reliably estimated.

Table B13a. Perchlorate in women ages 16 to 49 years: Median concentrations in urine, by race/ethnicity and family income, 2011-2014

Race / Ethnicity	Median concentration of perchlorate in urine (µg/L)		
	All Incomes‡ (n=1,138)	< Poverty Level (n=309)	≥ Poverty Level (n=750)
All Races/Ethnicities (n=1,138)	2.4	2.3	2.5
White Non-Hispanic (n=392)	2.4	2.1	2.5
Black Non-Hispanic (n=248)	2.5	2.7	2.5
Mexican-American (n=180)	3.4*	2.8*	3.6*
All Other Races/Ethnicities† (n=318)	2.1	1.4*	2.4

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Environmental Health, National Health and Nutrition Examination Survey

NOTE: To reflect exposures to women who are pregnant or may become pregnant, the estimates are adjusted for the probability (by age and race/ethnicity) that a woman gives birth. The intent of this adjustment is to approximate the distribution of exposure to pregnant women. Results will therefore differ from a characterization of exposure to adult women without consideration of birth rates.

† The “All Other Races/Ethnicities” category includes all other races or ethnicities not specified, together with those individuals who report more than one race.

‡ Includes sampled individuals for whom income information is missing.

*The estimate should be interpreted with caution because the standard error of the estimate is relatively large: the relative standard error, RSE, is at least 30% but is less than 40% (RSE = standard error divided by the estimate), or the RSE may be underestimated.

Table B13b. Perchlorate in women ages 16 to 49 years: 95th percentile concentrations in urine, by race/ethnicity and family income, 2011-2014

Race / Ethnicity	95th percentile concentration of perchlorate in urine (µg/L)		
	All Incomes‡ (n=1,138)	< Poverty Level (n=309)	≥ Poverty Level (n=750)
All Races/Ethnicities (n=1,138)	10.6	10.7	10.6
White Non-Hispanic (n=392)	9.1	11.1	9.1
Black Non-Hispanic (n=248)	11.7	11.7*	13.4
Mexican-American (n=180)	12.6*	8.5*	19.1*
All Other Races/Ethnicities† (n=318)	11.5	10.7*	12.3

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Environmental Health, National Health and Nutrition Examination Survey

NOTES:

- To reflect exposures to women who are pregnant or may become pregnant, the estimates are adjusted for the probability (by age and race/ethnicity) that a woman gives birth. The intent of this adjustment is to approximate the distribution of exposure to pregnant women. Results will therefore differ from a characterization of exposure to adult women without consideration of birth rates.
- Perchlorate does not appear to accumulate in bodily tissues; thus, the distribution of NHANES urinary perchlorate levels may overestimate high-end exposures as a result of collecting one-time urine samples rather than collecting urine for a longer time period.^{6,7,9}

† The “All Other Races/Ethnicities” category includes all other races or ethnicities not specified, together with those individuals who report more than one race.

‡ Includes sampled individuals for whom income information is missing.

*The estimate should be interpreted with caution because the standard error of the estimate is relatively large: the relative standard error, RSE, is at least 30% but is less than 40% (RSE = standard error divided by the estimate), or the RSE may be underestimated.

Table B13c. Perchlorate in children ages 6 to 17 years: Median and 95th percentile concentrations in urine, 2001-2014

	Concentration of perchlorate in urine (µg/L)						
	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014
Median	4.9	4.5	4.6	4.8	3.9	3.6	3.3
95th percentile	15.0	16.0	14.9	18.6	15.7	12.8	12.6

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Environmental Health, National Health and Nutrition Examination Survey

NOTE: Perchlorate does not appear to accumulate in bodily tissues; thus, the distribution of NHANES urinary perchlorate levels may overestimate high-end exposures as a result of collecting one-time urine samples rather than collecting urine for a longer time period.^{6,7,9}

Table B13d. Perchlorate in children ages 6 to 17 years: Median concentrations in urine, by race/ethnicity and family income, 2011-2014

Race / Ethnicity	Median concentration of perchlorate in urine (µg/L)		
	All Incomes‡ (n=1,411)	< Poverty Level (n=464)	≥ Poverty Level (n=849)
All Races/Ethnicities (n=1,411)	3.5	3.3	3.6
White Non-Hispanic (n=340)	3.6	3.0	3.6
Black Non-Hispanic (n=394)	3.5	3.5	3.4
Mexican-American (n=298)	3.5	3.0*	3.7
All Other Races/Ethnicities† (n=379)	3.3	3.2	3.1

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Environmental Health, National Health and Nutrition Examination Survey

† The “All Other Races/Ethnicities” category includes all other races or ethnicities not specified, together with those individuals who report more than one race.

‡ Includes sampled individuals for whom income information is missing.

*The estimate should be interpreted with caution because the standard error of the estimate is relatively large: the relative standard error, RSE, is at least 30% but is less than 40% (RSE = standard error divided by the estimate), or the RSE may be underestimated.

Table B13e. Perchlorate in children ages 6 to 17 years: 95th percentile concentrations in urine, by race/ethnicity and family income, 2011-2014

Race / Ethnicity	95 th percentile concentration of perchlorate in urine (µg/L)		
	All Incomes‡ (n=1,411)	< Poverty Level (n=464)	≥ Poverty Level (n=849)
All Races/Ethnicities (n=1,411)	12.8	12.1	12.8
White Non-Hispanic (n=340)	12.7	NA**	12.8
Black Non-Hispanic (n=394)	13.8	16.4	12.2
Mexican-American (n=298)	15.3	14.0*	NA**
All Other Races/Ethnicities† (n=379)	12.1	10.0	14.0*

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Environmental Health, National Health and Nutrition Examination Survey

NOTE: Perchlorate does not appear to accumulate in bodily tissues; thus, the distribution of NHANES urinary perchlorate levels may overestimate high-end exposures as a result of collecting one-time urine samples rather than collecting urine for a longer time period.^{6,7,9}

† The “All Other Races/Ethnicities” category includes all other races or ethnicities not specified, together with those individuals who report more than one race.

‡ Includes sampled individuals for whom income information is missing.

*The estimate should be interpreted with caution because the standard error of the estimate is relatively large: the relative standard error, RSE, is at least 30% but is less than 40% (RSE = standard error divided by the estimate), or the RSE may be underestimated.

** Not available. The estimate is not reported because it has large uncertainty: the relative standard error, RSE, is 40% or greater (RSE = standard error divided by the estimate), or the RSE cannot be reliably estimated.

Table B13f: Perchlorate in children ages 6 to 17 years: Median and 95th percentile concentrations by age group, 2011-2014

	Concentration of perchlorate in urine (µg/L)			
	All ages	Ages 6 to 10 years	Ages 11 to 15 years	Ages 16 to 17 years
Median	3.5	4.0	3.4	2.8
95th percentile	12.8	14.0	13.3	9.8

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Environmental Health, National Health and Nutrition Examination Survey

NOTE: Perchlorate does not appear to accumulate in bodily tissues; thus, the distribution of NHANES urinary perchlorate levels may overestimate high-end exposures as a result of collecting one-time urine samples rather than collecting urine for a longer time period.^{6,7,9}