

National Health and Nutrition Examination Survey

2015-2016 Data Documentation, Codebook, and Frequencies

Volatile Organic Compound (VOC) Metabolites - Urine (UVOC_I)

Data File: UVOC_I.xpt

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Component Description

Exposure to volatile organic compounds (VOCs) is ubiquitous. Chronic exposure to extremely high levels of some VOCs can lead to cancer and neurocognitive dysfunction. Urinary metabolites of VOCs can be detectable in urine for a longer period of time than the parent VOCs can be detected in blood.

Nearly 200 air toxicants have been associated with adverse health effects in occupational studies or laboratory studies, but have not been monitored in general population groups. Information on levels of exposure to these compounds, as measured by their metabolite levels in urine, is essential to determine the need for regulatory mechanisms to reduce the levels of hazardous air pollutants to which the general population is exposed.

Eligible Sample

All examined participants aged 3 to 5 years were eligible, and participants aged 6 years and older from a one-third subsample were eligible.

Description of Laboratory Methodology

This method is a quantitative procedure for the measurement of VOC metabolites in human urine using ultra performance liquid chromatography coupled with electrospray tandem mass spectrometry (UPLC-ESI/MSMS) as described by Alwis et al (2012). Chromatographic separation is achieved using an Acquity UPLC® HSS T3 (Part no. 186003540, 1.8 µm x 2.1 mm x 150 mm, Waters Inc.) column with 15 mM ammonium acetate and acetonitrile as the mobile phases. The eluent from the column is ionized using an electrospray interface to generate and transmit negative ions into the mass spectrometer. Comparison of relative response factors (ratio of native analyte to stable isotope labeled internal standard) with known standard concentrations yields individual analyte concentrations.

Refer to the Laboratory Method Files section for a detailed description of the laboratory methods used.

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Laboratory Method Files

[Urinary VOC Metabolites Laboratory Procedure Manual](#) (November 2018)

Laboratory Quality Assurance and Monitoring

Urine specimens are processed, stored, and shipped to the Division of Laboratory Sciences,

National Center for Environmental Health, Centers for Disease Control and Prevention, Atlanta GA for analysis.

Detailed instructions on specimen collection and processing are discussed in the NHANES [Laboratory Procedures Manual \(LPM\)](#). Vials are stored under appropriate frozen (–20°C) conditions until they are shipped to National Center for Environmental Health for testing.

The NHANES QA/QC protocols meet the 1988 Clinical Laboratory Improvement Act mandates. Detailed QA/QC instructions are discussed in the [NHANES LPM](#).

Mobile Examination Centers (MECs)

Laboratory team performance is monitored using several techniques. NCHS and contract consultants use a structured competency assessment evaluation during visits to evaluate both the quality of the laboratory work and the quality-control procedures. Each laboratory staff member is observed for equipment operation, specimen collection and preparation; testing procedures and constructive feedback are given to each staff member. Formal retraining sessions are conducted annually to ensure that required skill levels were maintained.

Analytical Laboratories

NHANES uses several methods to monitor the quality of the analyses performed by the contract laboratories. In the MEC, these methods include performing blind split samples collected during “dry run” sessions. In addition, contract laboratories randomly perform repeat testing on 2% of all specimens.

NCHS developed and distributed a quality control protocol for all CDC and contract laboratories, which outlined the use of Westgard rules (Westgard, et al. 1981) when running NHANES specimens. Progress reports containing any problems encountered during shipping or receipt of specimens, summary statistics for each control pool, QC graphs, instrument calibration, reagents, and any special considerations are submitted to NCHS quarterly. The reports are reviewed for trends or shifts in the data. The laboratories are required to explain any identified areas of concern.

All QC procedures recommended by the manufacturers were followed. Reported results for all assays meet the Division of Laboratory Sciences’ quality control and quality assurance performance criteria for accuracy and precision, similar to the Westgard rules (Caudill et al., 2008).

Data Processing and Editing

The data were reviewed. Incomplete data or improbable values were sent to the performing laboratory for confirmation.

Analytic Notes

Refer to the [2015-2016 Laboratory Data Overview](#) for general information on NHANES laboratory data.

Subsample Weights

VOC metabolites in urine were measured in a one-third subsample of participants aged 6 years and older. Special sample weights are required to analyze these data properly. Specific sample weights for this subsample are included in this data file and should be used when analyzing these data.

Demographic and Other Related Variables

The analysis of NHANES laboratory data must be conducted using the appropriate survey design and demographic variables. The NHANES [2015-2016 Demographics File](#) contains demographic data, health indicators, and other related information collected during household

interviews as well as the sample design variables. The recommended procedure for variance estimation requires use of stratum and PSU variables (SDMVSTRA and SDMVPSU, respectively) in the demographic data file.

This laboratory data file can be linked to the other NHANES data files using the unique survey participant identifier (i.e., SEQN).

Detection limits

The detection limits were constant for the analytes in the data set. Two variables are provided for each of these analytes. The variable named ending in "LC" (ex., URDAAMLC) indicates whether the result was below the limit of detection: the value "0" means that the result was at or above the limit of detection, "1" indicates that the result was below the limit of detection. For analytes with analytic results below the lower limit of detection (ex., URDAAMLC=1), an imputed fill value was placed in the analyte results field. This value is the lower limit of detection divided by the square root of 2 ($LLOD/\sqrt{2}$). The other variable prefixed URX (ex., URXAAM) provides the analytic result for the analyte. All data are rounded to three significant figures or three decimal places, whichever is less precise.

The lower limit of detection (LLOD, in ng/mL) for urinary VOC metabolites:

VARIABLE NAME	SAS LABEL	LLOD
URXAAM	N-Acetyl-S-(2-carbamoylethyl)-L-cysteine (ng/mL)	2.20
URXAMC	N-Acetyl-S-(N-methylcarbamoyl)-L-cysteine (ng/mL)	6.26
URXATC	2-Aminothiazoline-4-carboxylic acid (ng/mL)	15.0
URXBMA	N-Acetyl-S-(benzyl)-L-cysteine (ng/mL)	0.500
URXBPM	N-Acetyl-S-(n-propyl)-L-cysteine (ng/mL)	1.20
URXCEM	N-Acetyl-S-(2-carboxyethyl)-L-cysteine (ng/mL)	6.96
URXCYHA	N-Acetyl-S-(1-cyano-2-hydroxyethyl)-L-cysteine (ng/mL)	2.60
URXCYM	N-Acetyl-S-(2-cyanoethyl)-L-cysteine (ng/mL)	0.500
URX1DC	N-Acetyl-S-(1,2-dichlorovinyl)-L-cysteine (ng/mL)	12.6
URX2DC	N-Acetyl-S-(2,2-dichlorovinyl)-L-cysteine (ng/mL)	13.9
URXDHB	N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (ng/mL)	5.25
URXDPM	N-Acetyl-S-(dimethylphenyl)-L-cysteine (ng/mL)	0.500
URXGAM	N-Acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine (ng/mL)	9.40
URXHEM	N-Acetyl-S-(2-hydroxyethyl)-L-cysteine (ng/mL)	0.791
URXHPM	N-Acetyl-S-(3-hydroxypropyl)-L-cysteine (ng/mL)	13.0
URXHP2	N-Acetyl-S-(2-hydroxypropyl)-L-cysteine (ng/mL)	5.30
URXIPM1	N-Acetyl-S-(2-hydroxy-3-methyl-3-butenyl)-L-cysteine + N-Acetyl-S-(2-hydroxy-2-methyl-3-butenyl)-L-cysteine	1.43
URXIPM3	N-Acetyl- S- (4- hydroxy- 2- methyl- 2- butenyl)- L- cysteine (ng/mL)	1.20
URXMAD	Mandelic acid (ng/mL)	12.0
URX2MH	2-Methylhippuric acid (ng/mL)	5.00
URX34M	3- and 4-Methylhippuric acid (ng/mL)	8.00
URXMB1	N-Acetyl-S-(1-hydroxymethyl-2-propenyl)-L-cysteine (ng/mL)	0.700
URXMB2	N-Acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine (ng/mL)	0.700
URXMB3	N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine (ng/mL)	0.600
URXPHE	N-Acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine (ng/mL)	0.700
URXPHG	Phenylglyoxylic acid (ng/mL)	12.0
URXPMA	N-Acetyl-S-(phenyl)-L-cysteine (ng/mL)	0.600
URXPMM	N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine (ng/mL)	3.00
URXTCV	N-Acetyl-S-(trichlorovinyl)-L-cysteine (ng/mL)	3.00

Please refer to the NHANES [Analytic Guidelines](#) and the on-line NHANES [Tutorial](#) further details on the use of sample weights and other analytic issues.

References

- Alwis KU, Blount BC, Britt AS, Patel D, Ashley DL. 2012. Simultaneous analysis of 28 urinary VOC metabolites using ultra high performance liquid chromatography coupled with electrospray ionization tandem mass spectrometry (UPLC-ESI/MSMS). *Anal Chim Acta* 750: 152-160.
- Caudill SP, Schleicher RL, Pirkle JL. Multi-rule quality control for the age-related eye disease study. *Stat Med* 2008;27: 4094-106.
- Westgard J.O., Barry P.L., Hunt M.R., Groth T. A multi-rule Shewhart chart for quality control in clinical chemistry. *Clin Chem* (1981) 27: 493-501.


Codebook and Frequencies

SEQN - Respondent Sequence Number

Variable Name:	SEQN
SAS Label:	Respondent Sequence Number
English Text:	Respondent Sequence Number
Target:	Both males and females 3 YEARS - 150 YEARS

WTS2YR - Subsample A Weights

Variable Name: WTS2YR
SAS Label: Subsample A Weights
English Text: Subsample A Weights
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
6552.119284 to 708844.24678	Range of Values	3231	3231	
0 	Participants 6+ years with no lab specimen	48	3279	
.	Missing	0	3279	

URX1DC - N-acel-S-(1,2-dichlorovinyl)-L-cys(ng/mL)

Variable Name: URX1DC**SAS Label:** N-acel-S-(1,2-dichlorovinyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(1,2-dichlorovinyl)-L-cysteine (ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
8.9	8.9	2886	2886	
.	Missing	393	3279	

URD1DCLC - N-acel-S-(1,2-dichlorovinl)-L-cys comt

Variable Name: URD1DCLC
SAS Label: N-acel-S-(1,2-dichlorovinl)-L-cys comt
English Text: N-acetyl-S-(1,2-dichlorovinyl)-L-cysteine comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	0	0	
1	Below lower detection limit	2886	2886	
.	Missing	393	3279	

URX2DC - N-acel-S-(2,2-dichlorvinyl)-L-cys(ng/mL)

Variable Name: URX2DC**SAS Label:** N-acel-S-(2,2-dichlorvinyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(2,2-dichlorovinyl)-L-cysteine (ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
9.8	9.8	2831	2831	
.	Missing	448	3279	

URD2DCLC - N-acel-S-(2,2-dichlorvinyl)-L-cys comt

Variable Name: URD2DCLC**SAS Label:** N-acel-S-(2,2-dichlorvinyl)-L-cys comt**English Text:** N-acetyl-S-(2,2-dichlorovinyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	0	0	
1	Below lower detection limit	2831	2831	
.	Missing	448	3279	

URX2MH - 2-methylhippuric acid (ng/mL)

Variable Name: URX2MH**SAS Label:** 2-methylhippuric acid (ng/mL)**English Text:** 2-methylhippuric acid (ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
3.54 to 2330	Range of Values	3015	3015	
.	Missing	264	3279	

URD2MHLC - 2-methylhippuric acid comment code

Variable Name: URD2MHLC
SAS Label: 2-methylhippuric acid comment code
English Text: 2-methylhippuric acid comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2727	2727	
1	Below lower detection limit	288	3015	
.	Missing	264	3279	

URX34M - 3-methipurc acd & 4-methipurc acd(ng/mL)

Variable Name: URX34M**SAS Label:** 3-methipurc acd & 4-methipurc acd(ng/mL)**English Text:** 3-methylhippuric acid & 4-methylhippuric acid(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
5.66 to 30700	Range of Values	3014	3014	
.	Missing	265	3279	

URD34MLC - 3-methipurc acd & 4-methipurc acid comt

Variable Name: URD34MLC**SAS Label:** 3-methipurc acd & 4-methipurc acid comt**English Text:** 3-methylhippuric acid & 4-methylhippuric acid comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	3001	3001	
1	Below lower detection limit	13	3014	
.	Missing	265	3279	

URXAAM - N-ace-S-(2-carbamoylethyl)-L-cys(ng/mL)

Variable Name: URXAAM**SAS Label:** N-ace-S-(2-carbamoylethyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(2-carbamoylethyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1.56 to 1640	Range of Values	3015	3015	
.	Missing	264	3279	

URDAAMLC - N-ace-S-(2-carbamoylethyl)-L-cys comt

Variable Name: URDAAMLC**SAS Label:** N-ace-S-(2-carbamoylethyl)-L-cys comt**English Text:** N-acetyl-S-(2-carbamoylethyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	3012	3012	
1	Below lower detection limit	3	3015	
.	Missing	264	3279	

URXAMC - N-ace-S-(N-methylcarbamoyl)-L-cys(ng/mL)

Variable Name: URXAMC**SAS Label:** N-ace-S-(N-methylcarbamoyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(N-methylcarbamoyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
4.43 to 3350	Range of Values	2965	2965	
.	Missing	314	3279	

URDAMCLC - N-ace-S-(N-methylcarbamoyl)-L-cys comt

Variable Name: URDAMCLC**SAS Label:** N-ace-S-(N-methylcarbamoyl)-L-cys comt**English Text:** N-acetyl-S-(N-methylcarbamoyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2949	2949	
1	Below lower detection limit	16	2965	
.	Missing	314	3279	

URXATC - 2-amnothiazolne-4-carbxylic acid(ng/mL)

Variable Name: URXATC**SAS Label:** 2-amnothiazolne-4-carbxylic acid(ng/mL)**English Text:** 2-aminothiazoline-4-carboxylic acid(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
10.6 to 2390	Range of Values	3015	3015	
.	Missing	264	3279	

URDATCLC - 2-amnothiazolne-4-carbxylic acid comt

Variable Name: URDATCLC
SAS Label: 2-amnothiazolne-4-carbxylic acid comt
English Text: 2-amnothiazolne-4-carbxylic acid comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2938	2938	
1	Below lower detection limit	77	3015	
.	Missing	264	3279	

URXBMA - N-acetyl-S-(benzyl)-L-cysteine(ng/mL)

Variable Name: URXBMA**SAS Label:** N-acetyl-S-(benzyl)-L-cysteine(ng/mL)**English Text:** N-acetyl-S-(benzyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.354 to 1330	Range of Values	3014	3014	
.	Missing	265	3279	

URDBMALC - N-acetyl-S-(benzyl)-L-cysteine comt

Variable Name: URDBMALC
SAS Label: N-acetyl-S-(benzyl)-L-cysteine comt
English Text: N-acetyl-S-(benzyl)-L-cysteine comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	3003	3003	
1	Below lower detection limit	11	3014	
.	Missing	265	3279	

URXBPM - N-acetyl-S-(n-propyl)-L-cysteine(ng/mL)

Variable Name: URXBPM**SAS Label:** N-acetyl-S-(n-propyl)-L-cysteine(ng/mL)**English Text:** N-acetyl-S-(n-propyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.85 to 707	Range of Values	2952	2952	
.	Missing	327	3279	

URDBPMLC - N-acetyl-S-(n-propyl)-L-cysteine comt

Variable Name: URDBPMLC
SAS Label: N-acetyl-S-(n-propyl)-L-cysteine comt
English Text: N-acetyl-S-(n-propyl)-L-cysteine comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2220	2220	
1	Below lower detection limit	732	2952	
.	Missing	327	3279	

URXCEM - N-acetyl-S-(2-carboxyethyl)-L-cys(ng/mL)

Variable Name: URXCEM**SAS Label:** N-acetyl-S-(2-carboxyethyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(2-carboxyethyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
4.92 to 3570	Range of Values	3015	3015	
.	Missing	264	3279	

URDCEMLC - N-acetyl-S-(2-carboxyethyl)-L-cys comt

Variable Name: URDCEMLC**SAS Label:** N-acetyl-S- (2-carboxyethyl)-L-cys comt**English Text:** N-acetyl-S- (2-carboxyethyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	3003	3003	
1	Below lower detection limit	12	3015	
.	Missing	264	3279	

URXCYHA - CYHA cysteine (ng/mL)

Variable Name: URXCYHA**SAS Label:** CYHA cysteine (ng/mL)**English Text:** N-Acetyl-S-(1-cyano-2-hydroxyethyl)-L-cysteine (CYHA) (ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1.84 to 452	Range of Values	3015	3015	
.	Missing	264	3279	

URDCYALC - CYHA cysteine comment code

Variable Name: URDCYALC**SAS Label:** CYHA cysteine comment code**English Text:** N-Acetyl-S-(1-cyano-2-hydroxyethyl)-L-cysteine (CYHA) comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	440	440	
1	Below lower detection limit	2575	3015	
.	Missing	264	3279	

URXCYM - N-acetyl-S-(2-cyanoethyl)-L-cyst(ng/mL)

Variable Name: URXCYM**SAS Label:** N-acetyl-S-(2-cyanoethyl)-L-cyst(ng/mL)**English Text:** N-acetyl-S-(2-cyanoethyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.354 to 1480	Range of Values	3015	3015	
.	Missing	264	3279	

URDCYMLC - N-acetyl-S-(2-cyanoethyl)-L-cyst comt

Variable Name: URDCYMLC
SAS Label: N-acetyl-S-(2-cyanoethyl)-L-cyst comt
English Text: N-acetyl-S-(2-cyanoethyl)-L-cysteine comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2369	2369	
1	Below lower detection limit	646	3015	
.	Missing	264	3279	

URXDHB - N-ace-S-(3,4-dihidxybutl)-L-cys(ng/mL)

Variable Name: URXDHB**SAS Label:** N-ace-S-(3,4-dihidxybutl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(3,4-dihidroxybutyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
16.1 to 3140	Range of Values	2691	2691	
.	Missing	588	3279	

URDDHBLC - N-ace-S-(3,4-dihidxybutl)-L-cys comt

Variable Name: URDDHBLC**SAS Label:** N-ace-S-(3,4-dihidxybutl)-L-cys comt**English Text:** N-acetyl-S-(3,4-dihydroxybutyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2691	2691	
1	Below lower detection limit	0	2691	
.	Missing	588	3279	

URXDPM - N-ace-S-(dimethylphenyl)-L-cys(ng/mL)

Variable Name: URXDPM**SAS Label:** N-ace-S-(dimethylphenyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(dimethylphenyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.354 to 6.38	Range of Values	3015	3015	
.	Missing	264	3279	

URDDPMLC - N-ace-S-(dimethylphenyl)-L-cys comt

Variable Name: URDDPMLC**SAS Label:** N-ace-S-(dimethylphenyl)-L-cys comt**English Text:** N-acetyl-S-(dimethylphenyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	5	5	
1	Below lower detection limit	3010	3015	
.	Missing	264	3279	

URXGAM - N-ac-S-(2-carbmo-2-hydxel)-L-cys(ng/mL)

Variable Name: URXGAM**SAS Label:** N-ac-S-(2-carbmo-2-hydxel)-L-cys(ng/mL)**English Text:** N-acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
6.65 to 114	Range of Values	3015	3015	
.	Missing	264	3279	

URDGAMLC - N-ac-S-(2-carbmo-2-hydxel)-L-cys comt

Variable Name: URDGAMLC**SAS Label:** N-ac-S-(2-carbmo-2-hydxel)-L-cys comt**English Text:** N-acetyl-S-(2-carbamoyl-2-hydroxyethyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	1197	1197	
1	Below lower detection limit	1818	3015	
.	Missing	264	3279	

URXHEM - N-ace-S-(2-hydroxyethyl)-L-cys(ng/mL)

Variable Name: URXHEM**SAS Label:** N-ace-S-(2-hydroxyethyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(2-hydroxyethyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.559 to 49.4	Range of Values	3015	3015	
.	Missing	264	3279	

URDHEMLC - N-ace-S-(2-hydroxyethyl)-L-cys comt

Variable Name: URDHEMLC**SAS Label:** N-ace-S-(2-hydroxyethyl)-L-cys comt**English Text:** N-acetyl-S-(2-hydroxyethyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	1546	1546	
1	Below lower detection limit	1469	3015	
.	Missing	264	3279	

URXHP2 - N-ace-S-(2-hydroxypropyl)-L-cys(ng/mL)

Variable Name: URXHP2**SAS Label:** N-ace-S-(2-hydroxypropyl)-L-cys(ng/mL)**English Text:** N-acetyl-S- (2-hydroxypropyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
3.75 to 9830	Range of Values	3014	3014	
.	Missing	265	3279	

URDHP2LC - N-ace-S-(2-hydroxypropyl)-L-cys comt

Variable Name: URDHP2LC**SAS Label:** N-ace-S-(2-hydroxypropyl)-L-cys comt**English Text:** N-acetyl-S- (2-hydroxypropyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2862	2862	
1	Below lower detection limit	152	3014	
.	Missing	265	3279	

URXHPM - N-ace-S-(3-hydroxypropyl)-L-cys(ng/mL)

Variable Name: URXHPM**SAS Label:** N-ace-S-(3-hydroxypropyl)-L-cys(ng/mL)**English Text:** N-acetyl-S- (3-hydroxypropyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
9.2 to 11900	Range of Values	2821	2821	
.	Missing	458	3279	

URDHPMLC - N-ace-S-(3-hydroxypropyl)-L-cys comt

Variable Name: URDHPMLC**SAS Label:** N-ace-S-(3-hydroxypropyl)-L-cys comt**English Text:** N-acetyl-S- (3-hydroxypropyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2816	2816	
1	Below lower detection limit	5	2821	
.	Missing	458	3279	

URXIPM1 - IPM1 cysteine (ng/mL)

Variable Name: URXIPM1**SAS Label:** IPM1 cysteine (ng/mL)**English Text:** N-Acetyl-S-(2-hydroxy-3-methyl-3-butenyl)-L-cysteine + N-Acetyl-S-(2-hydroxy-2-methyl-3-butenyl)-L-cysteine (ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
1.01 to 80.3	Range of Values	3015	3015	
.	Missing	264	3279	

URDPM1LC - IPM1 cysteine comment code

Variable Name: URDPM1LC**SAS Label:** IPM1 cysteine comment code**English Text:** N-Acetyl-S-(2-hydroxy-3-methyl-3-butenyl)-L-cysteine + N-Acetyl-S-(2-hydroxy-2-methyl-3-butenyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2225	2225	
1	Below lower detection limit	790	3015	
.	Missing	264	3279	

URXIPM3 - IPM3 cysteine (ng/mL)

Variable Name: URXIPM3**SAS Label:** IPM3 cysteine (ng/mL)**English Text:** N-Acetyl-S-(4-hydroxy-2-methyl-2-butenyl)-L-cysteine (ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.85 to 492	Range of Values	3015	3015	
.	Missing	264	3279	

URDPM3LC - IPM3 cysteine comment code

Variable Name: URDPM3LC**SAS Label:** IPM3 cysteine comment code**English Text:** N-Acetyl-S-(4-hydroxy-2-methyl-2-butenyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2419	2419	
1	Below lower detection limit	596	3015	
.	Missing	264	3279	

URXMAD - Mandelic acid(ng/mL)

Variable Name: URXMAD**SAS Label:** Mandelic acid(ng/mL)**English Text:** Mandelic acid(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
8.5 to 4330	Range of Values	3008	3008	
.	Missing	271	3279	

URDMADLC - Mandelic acid comment code

Variable Name: URDMADLC
SAS Label: Mandelic acid comment code
English Text: Mandelic acid comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2971	2971	
1	Below lower detection limit	37	3008	
.	Missing	271	3279	

URXMB1 - N-A-S-(1-hydrxmet)-2-Prpn)-L-cys(ng/mL)

Variable Name: URXMB1**SAS Label:** N-A-S-(1-hydrxmet)-2-Prpn)-L-cys(ng/mL)**English Text:** N-acetyl-S-(1-hydroxymethyl)-2-propenyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.495 to 1.54	Range of Values	2987	2987	
.	Missing	292	3279	

URDMB1LC - N-A-S-(1-hydrxmet)-2-Prpn)-L-cys comt

Variable Name: URDMB1LC**SAS Label:** N-A-S-(1-hydrxmet)-2-Prpn)-L-cys comt**English Text:** N-acetyl-S-(1-hydroxymethyl)-2-Propenyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	14	14	
1	Below lower detection limit	2973	2987	
.	Missing	292	3279	

URXMB2 - N-Ac-S-(2-hydrxy-3-butenyl)-L-cys(ng/mL)

Variable Name: URXMB2**SAS Label:** N-Ac-S-(2-hydrxy-3-butenyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine (ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.495 to 94.9	Range of Values	3015	3015	
.	Missing	264	3279	

URDMB2LC - N-Ac-S-(2-hydrxy-3-butenyl)-L-cys comt

Variable Name: URDMB2LC**SAS Label:** N-Ac-S-(2-hydrxy-3-butenyl)-L-cys comt**English Text:** N-acetyl-S-(2-hydroxy-3-butenyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	279	279	
1	Below lower detection limit	2736	3015	
.	Missing	264	3279	

URXMB3 - N-A-S-(4-hydrxy-2-butenyl)-L-cys(ng/mL)

Variable Name: URXMB3**SAS Label:** N-A-S-(4-hydrxy-2-butenyl)-L-cys(ng/mL)**English Text:** N-acetyl-S- (4-hydroxy-2-butenyl)-L-cysteine (ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.424 to 407	Range of Values	3015	3015	
.	Missing	264	3279	

URDMB3LC - N-A-S-(4-hydrxy-2-butenyl)-L-cys comt

Variable Name: URDMB3LC**SAS Label:** N-A-S-(4-hydrxy-2-butenyl)-L-cys comt**English Text:** N-acetyl-S- (4-hydroxy-2-butenyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2843	2843	
1	Below lower detection limit	172	3015	
.	Missing	264	3279	

URXPHE - N-ace-S-(phenl-2-hydxyetl)-L-cys(ng/mL)

Variable Name: URXPHE**SAS Label:** N-ace-S-(phenl-2-hydxyetl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.495 to 48.6	Range of Values	2947	2947	
.	Missing	332	3279	

URDPHELC - N-ace-S-(phenl-2-hydxyetl)-L-cys comt

Variable Name: URDPHELC
SAS Label: N-ace-S-(phenl-2-hydxyetl)-L-cys comt
English Text: N-acetyl-S-(phenyl-2-hydroxyethyl)-L-cysteine comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	1480	1480	
1	Below lower detection limit	1467	2947	
.	Missing	332	3279	

URXPHG - Phenylglyoxylic acid(ng/mL)

Variable Name: URXPHG**SAS Label:** Phenylglyoxylic acid(ng/mL)**English Text:** Phenylglyoxylic acid(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
8.5 to 5320	Range of Values	3013	3013	
.	Missing	266	3279	

URDPHGLC - Phenylglyoxylic acid comment code

Variable Name: URDPHGLC
SAS Label: Phenylglyoxylic acid comment code
English Text: Phenylglyoxylic acid comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	2991	2991	
1	Below lower detection limit	22	3013	
.	Missing	266	3279	

URXPMA - N-acetyl-S-(phenyl)-L-cysteine(ng/mL)

Variable Name: URXPMA**SAS Label:** N-acetyl-S-(phenyl)-L-cysteine(ng/mL)**English Text:** N-acetyl-S-(phenyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0.424 to 28	Range of Values	3015	3015	
.	Missing	264	3279	

URDPMALC - N-acetyl-S-(phenyl)-L-cysteine comt

Variable Name: URDPMALC
SAS Label: N-acetyl-S-(phenyl)-L-cysteine comt
English Text: N-acetyl-S-(phenyl)-L-cysteine comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	1426	1426	
1	Below lower detection limit	1589	3015	
.	Missing	264	3279	

URXPMM - N-A-S-(3-hydrxprpl-1-metl)-L-cys(ng/mL)

Variable Name: URXPMM**SAS Label:** N-A-S-(3-hydrxprpl-1-metl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
14.1 to 25100	Range of Values	3015	3015	
.	Missing	264	3279	

URDPMMLC - N-A-S-(3-hydrxprpl-1-metl)-L-cys comt

Variable Name: URDPMMLC**SAS Label:** N-A-S-(3-hydrxprpl-1-metl)-L-cys comt**English Text:** N-acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine comment code**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	3015	3015	
1	Below lower detection limit	0	3015	
.	Missing	264	3279	

URXTCV - N-acetyl-S-(trichlorovinyl)-L-cys(ng/mL)

Variable Name: URXTCV**SAS Label:** N-acetyl-S-(trichlorovinyl)-L-cys(ng/mL)**English Text:** N-acetyl-S-(trichlorovinyl)-L-cysteine(ng/mL)**Target:** Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
2.12	2.12	3015	3015	
.	Missing	264	3279	

URDTCVLC - N-acetyl-S-(trichlorovinyl)-L-cys comt

Variable Name: URDTCVLC
SAS Label: N-acetyl-S-(trichlorovinyl)-L-cys comt
English Text: N-acetyl-S-(trichlorovinyl)-L-cysteine comment code
Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
0	At or above the detection limit	0	0	
1	Below lower detection limit	3015	3015	
.	Missing	264	3279	