National Health and Nutrition Examination Survey

2017-March 2020 Data Documentation, Codebook, and Frequencies

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

Data File: P_UVOC.xpt

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Component Description

The NHANES program suspended field operations in March 2020 due to the coronavirus disease 2019 (COVID-19) pandemic. As a result, data collection for the NHANES 2019-2020 cycle was not completed and the collected data are not nationally representative. Therefore, data collected from 2019 to March 2020 were combined with data from the NHANES 2017-2018 cycle to form a nationally representative sample of NHANES 2017-March 2020 pre-pandemic data. These data are available to the public. Please refer to the Analytic Notes section for more details on the use of the data.

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 and participants aged 6 years and older from a one-third subsample in the NHANES 2017-March 2020 pre-pandemic sample 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.

Laboratory Method Files

Volatile Organic Compounds (VOCs) Metabolites (September 2022)

Volatile Organic Compounds (VOCs) Metabolites (September 2022)

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 2017-2018 and 2019-2020 NHANES Laboratory Procedures Manuals (LPMs). Vials are stored under appropriate frozen (–30°C) conditions until they are shipped to National Center for Environmental Health for testing.

The NHANES quality assurance and quality control (QA/QC) protocols meet the 1988 Clinical Laboratory Improvement Amendment mandates. Detailed QA/QC instructions are discussed in the NHANES LPMs.

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 QC 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 CDC and 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 QC protocol for all CDC and contract laboratories, which outlined the use of Westgard rules (Westgard, et al., 1981) when testing 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’ QA/QC 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

The COVID-19 pandemic required suspension of NHANES 2019-2020 field operations in March 2020 after data were collected in 18 of the 30 survey locations in the 2019-2020 sample. Data collection was cancelled for the remaining 12 locations. Because the collected data from 18 locations were not nationally representative, these data were combined with data from the previous cycle (2017-2018) to create a 2017-March 2020 pre-pandemic data file. A special weighting process was applied to the 2017-March 2020 pre-pandemic data file. The resulting sample weights in the demographic data file should be used to calculate estimates from the combined cycles. These sample weights are not appropriate for independent analyses of the 2019-2020 data and will not yield nationally representative results for either the 2017-2018 data alone or the 2019-March 2020 data alone. Please refer to the NHANES website for additional information for the NHANES 2017-March 2020 pre-pandemic data, and for the previous 2017-2018 public use data file with

specific weights for that 2-year cycle.

Refer to the 2017-2018 and 2019-2020 Laboratory Data Overview documents for general information on NHANES laboratory data.

There are over 800 laboratory tests performed on NHANES participants. However, not all participants provided biospecimens or enough volume for all the tests to be performed. The specimen availability can also vary by age or other population characteristics. Analysts should evaluate the extent of missing data in the dataset related to the outcome of interest as well as any predictor variables used in the analyses to determine whether additional re-weighting for item non-response is necessary.

Please refer to the NHANES Analytic Guidelines and the on-line NHANES Tutorial for further details on the use of sample weights and other analytic issues.

Subsample Weights

The analytes included in this dataset were measured in all examined participants aged 3-5 years, and in a one-third subsample of participants 6 years and older. Special sample weights are required to analyze these data properly. Variable (WTSAPRP) encoding of the specific sample weights for this subsample is included in this data file and should be used when analyzing these data. These special sample weights were created to account for the subsample selection probability, as well as the additional nonresponse to these lab tests. Therefore, if participants were eligible for the subsample, but did not provide a urine specimen, they would have the sample weight value assigned as “0” in their records.

Demographic and Other Related Variables

The analysis of NHANES laboratory data must be conducted the appropriate survey design and demographic variables. The NHANES 2017- March 2020 Pre-Pandemic 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	ANALYTE NAME	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)	29.5
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
URXDHB	N-Acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (ng/mL)	5.25
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)	5.3
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
URXMB3	N-Acetyl-S-(4-hydroxy-2-butenyl)-L-cysteine (ng/mL)	0.600
URXPHG	Phenylglyoxylic acid (ng/mL)	12.0
URXPMM	N-Acetyl-S-(3-hydroxypropyl-1-methyl)-L-cysteine (ng/mL)	1.70
URXTTC	2-Thioxothiazolidine-4-carboxylic acid	11.2

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

WTSAPRP - Subsample A Weights Pre-Pandemic

Variable Name: WTSAPRP

SAS Label: Subsample A Weights Pre-Pandemic

English Text: Subsample A Weights Pre-Pandemic

Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
2395.195359 to 955677.30961	Range of Values	4727	4727	
0	Participants 3+ years with no lab specimen	163	4890	
.	Missing	0	4890	

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 60300	Range of Values	4325	4325	
.	Missing	565	4890	

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	3818	3818	
1	Below lower detection limit	507	4325	
.	Missing	565	4890	

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 586000	Range of Values	4325	4325	
.	Missing	565	4890	

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	4296	4296	
1	Below lower detection limit	29	4325	
.	Missing	565	4890	

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 5350	Range of Values	4325	4325	
.	Missing	565	4890	

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	4322	4322	
1	Below lower detection limit	3	4325	
.	Missing	565	4890	

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

Variable Name: URXAMC

SAS Label: N-ace-S-(N-methlcarbamoyl)-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 46300	Range of Values	4325	4325	
.	Missing	565	4890	

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

Variable Name: URDAMCLC

SAS Label: N-ace-S-(N-methlcarbamoyl)-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	4297	4297	
1	Below lower detection limit	28	4325	
.	Missing	565	4890	

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
20.9 to 3250	Range of Values	4325	4325	
.	Missing	565	4890	

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	3904	3904	
1	Below lower detection limit	421	4325	
.	Missing	565	4890	

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 1630	Range of Values	4325	4325	
.	Missing	565	4890	

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	4313	4313	
1	Below lower detection limit	12	4325	
.	Missing	565	4890	

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 1490	Range of Values	4325	4325	
.	Missing	565	4890	

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	3197	3197	
1	Below lower detection limit	1128	4325	
.	Missing	565	4890	

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

Variable Name: URXCEM

SAS Label: N-acetyl-S-(2-carbxyethyl)-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 3030	Range of Values	4325	4325	
.	Missing	565	4890	

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

Variable Name: URDCEMLC

SAS Label: N-acetyl-S-(2-carbxyethyl)-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	4268	4268	
1	Below lower detection limit	57	4325	
.	Missing	565	4890	

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 414	Range of Values	4325	4325	
.	Missing	565	4890	

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	673	673	
1	Below lower detection limit	3652	4325	
.	Missing	565	4890	

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 2800	Range of Values	4325	4325	
.	Missing	565	4890	

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	3501	3501	
1	Below lower detection limit	824	4325	
.	Missing	565	4890	

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 to 3890	Range of Values	4325	4325	
.	Missing	565	4890	

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-dihidroxybutyl)-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	4325	4325	
1	Below lower detection limit	0	4325	
.	Missing	565	4890	

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 383	Range of Values	4325	4325	
.	Missing	565	4890	

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	1792	1792	
1	Below lower detection limit	2533	4325	
.	Missing	565	4890	

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 71.3	Range of Values	4325	4325	
.	Missing	565	4890	

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	2016	2016	
1	Below lower detection limit	2309	4325	
.	Missing	565	4890	

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 10100	Range of Values	4325	4325	
.	Missing	565	4890	

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	4097	4097	
1	Below lower detection limit	228	4325	
.	Missing	565	4890	

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 14600	Range of Values	4325	4325	
.	Missing	565	4890	

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	4312	4312	
1	Below lower detection limit	13	4325	
.	Missing	565	4890	

URXIPM3 - IPM3 cysteine (ng/mL)

Variable Name: URXIPM3

SAS Label: IPM3 cysteine (ng/mL)

English Text: N-Acetyl-S-(4-hydroxy-2-methyl-2-buten-1-yl)-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 912	Range of Values	4324	4324	
.	Missing	566	4890	

URDPM3LC - IPM3 cysteine comment code

Variable Name: URDPM3LC

SAS Label: IPM3 cysteine comment code

English Text: N-Acetyl-S-(4-hydroxy-2-methyl-2-buten-1-yl)-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	3566	3566	
1	Below lower detection limit	758	4324	
.	Missing	566	4890	

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 12700	Range of Values	4325	4325	
.	Missing	565	4890	

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	4278	4278	
1	Below lower detection limit	47	4325	
.	Missing	565	4890	

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 444	Range of Values	4325	4325	
.	Missing	565	4890	

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	4215	4215	
1	Below lower detection limit	110	4325	
.	Missing	565	4890	

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 7940	Range of Values	4325	4325	
.	Missing	565	4890	

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	4319	4319	
1	Below lower detection limit	6	4325	
.	Missing	565	4890	

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
9.39 to 12600	Range of Values	4325	4325	
.	Missing	565	4890	

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	4325	4325	
1	Below lower detection limit	0	4325	
.	Missing	565	4890	

URXTTC - 2-Thioxothiazolidine-4-carboxylic acid

Variable Name: URXTTC

SAS Label: 2-Thioxothiazolidine-4-carboxylic acid

English Text: 2-Thioxothiazolidine-4-carboxylic acid

Target: Both males and females 3 YEARS - 150 YEARS

Code or Value	Value Description	Count	Cumulative	Skip to Item
7.9 to 1760	Range of Values	4325	4325	
.	Missing	565	4890	

URDTTCLC - 2-Thoxothazlidne-4-carbxylic comt

Variable Name: URDTTCLC

SAS Label: 2-Thoxothazlidne-4-carbxylic comt

English Text: 2-Thioxothiazolidine-4-carboxylic 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	1523	1523	
1	Below lower detection limit	2802	4325	
.	Missing	565	4890	