United States Environmental Protection Agency

The Third Unregulated Contaminant Monitoring Rule (UCMR 3): Data Summary

April 2014

EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) program to collect data for contaminants suspected to be present in drinking water, but that do not have health-based standards set under the Safe Drinking Water Act (SDWA). Every five years EPA develops a new list of UCMR contaminants, largely based on the Contaminant Candidate List (CCL). The SDWA Amendments of 1996 provide for:

- Monitoring no more than 30 contaminants per 5-year cycle
- Monitoring only a representative sample of public water systems serving less than 10,000 people
- Storing analytical results in a National Contaminant Occurrence Database (NCOD)

This dataset represents the third NCOD release of analytical results for UCMR 3. Updates will occur approximately quarterly and EPA anticipates that additional reference material will be made available to assist with the assessment of the UCMR 3 data. For more information about UCMR 3, please visit our website: http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/index.cfm. Information regarding many of the UCMR 3 contaminants (including a description of their use) may also be found at the CCL website: http://water.epa.gov/scitech/drinkingwater/dws/ccl/ccl3.cfm#chemical.

UCMR 3 Data Considerations

- This dataset is not complete. UCMR 3 monitoring occurs through December 2015, and data are expected to be reported to EPA through the summer of 2016.
- Data are presented as seven method-specific text files (UCMR3_200_8.txt, UCMR3_218_7.txt, UCMR3_300_1.txt, UCMR3_522.txt, UCMR3_524_3.txt, UCMR3_537.txt, UCMR3_539.txt), one text file containing disinfectant residual type (UCMR3_DRT.txt), one text file containing the U.S. Postal Service Zip Code(s) for all areas served by a PWS (UCMR3_ZipCodes.txt) and one text file containing all UCMR 3 data to date (UCMR3_All.txt).
- Data are added and possibly removed or updated over the course of this reporting cycle. These results are subject to corrections following further review on the part of the analytical laboratory, the public water system, the State or EPA.
- Samples collected at the maximum residence time in the distribution system (MR) are required to be analyzed for metals (including chromium-6) and chlorate.
- Water systems monitoring for Method 300.1 (chlorate) report disinfectant types.
- Population categories are based on retail population as indicated by the Safe Drinking Water Information System (Federal) (SDWIS/FED) as of December 31, 2010.
- These text files are tab delimited and have no text qualifier. Field names are included in the first row of each file.
- If you wish to perform additional data analyses, EPA suggests you import each field into your choice of software as text. Some of the IDs can be misinterpreted as long integer field types when they actually contain alpha characters.

Contaminant	MRL[1]	Reference Concentration [1]	Total number of results	Number of results ≥MRL	Number of results >Reference Concentration	% of total results >Reference Concentration	Total number of PWSs with results	Number of PWSs with results ≥MRL	Number of PWSs with results >Reference Concentration	% of PWSs with results >Reference Concentration
1,2,3-trichloropropane	0.03	0.0004 / 0.04[2]	10669	100	100 / 78[2]	0.9% / 0.7%[2]	1844	32	32 / 25[2]	1.7% / 1.4%[2]
1,3-butadiene	0.1	0.0103 / 1.03[2]	10669	1	1 / 0[2]	0.009% / 0%[2]	1844	1	1 / 0[2]	0.05% / 0%[2]
Chloromethane	0.2	2.69 / 269[2]	10668	71	7/ 0[2]	0.07% / 0%[2]	1844	40	5 / 0[2]	0.3% / 0%[2]
1,1-dichloroethane	0.03	6.14 / 614[2]	10668	316	0 / 0[2]	0% / 0%[2]	1844	86	0 / 0[2]	0% / 0%[2]
Bromomethane	0.2	140	10669	34	0	0%	1844	20	0	0%
HCFC-22	0.08	NA	10669	232	--	--	1844	94	--	--
Halon 1011	0.06	90	10669	213	0	0%	1844	104	0	0%
1,4-dioxane	0.07	0.35 / 35[2]	10548	1231	368 / 0[2]	3.5% / 0%[2]	1848	373	126 / 0[2]	6.8% / 0%[2]
Vanadium	0.2	21	17921	11263	518	2.9%	1859	1379	63	3.4%
Molybdenum	1	40	17922	7735	43	0.24%	1859	962	13	0.7%
Cobalt	1	70	17925	233	3	0.02%	1860	85	3	0.2%
Strontium	0.3	4000	17907	17787	70	0.4%	1858	1858	19	1.0%
Chromium	0.2	100	17801	8671	0	0%	1855	1304	0	0%
Chromium-6	0.03	NA	18085	13779	--	--	1873	1686	--	--
Chlorate	20	210	17700	10094	2799	15.8%	1859	1290	655	35%
PFOS	0.04	0.2	10797	82	8	0.07%	1874	34	6	0.3%
PFOA	0.02	0.4	10797	93	0	0%	1874	36	0	0%
PFNA	0.02	NA	10797	6	--	--	1874	4	--	--
PFHxS	0.03	NA	10797	66	--	--	1874	21	--	--
PFHpA	0.01	NA	10797	70	--	--	1874	29	--	--
PFBS	0.09	NA	10797	2	--	--	1874	2	--	--
17β-estradiol	0.0004	0.0009 / 0.09[2]	3541	0	0 / 0[2]	0% / 0%[2]	370	0	0 / 0[2]	0% / 0%[2]
17α-ethynylestradiol	0.0009	0.035	3542	1	0	0%	370	1	0	0%
Estriol	0.0008	0.35	3542	1	0	0%	370	1	0	0%
Equilin	0.004	0.35	3542	0	0	0%	370	0	0	0%
Estrone	0.002	0.35	3542	0	0	0%	370	0	0	0%
Testosterone	0.0001	NA	3542	19	--	--	370	17	--	--
4-androstene-3,17-dione	0.0003	NA	3540	16	--	--	370	12	--	--

[1]Measured in µg/L (ppb)
[2]Where two reference concentrations are listed, the first number is associated with a 10^{-6} cancer risk; the second number a 10^{-4} cancer risk.
Where two results are presented the first number is associated with the first reference concentration; the second number is associated with the second reference concentration.

Field Name	Definition	
AssociatedFacilityID	The facility ID of the associated DS/MRT	
AssociatedSamplePointID	The sample point ID of the associated DS/MRT	
Disinfectant Type	CLGA	Gaseous Chlorine
	CLOF	Offsite Generated Hypochlorite (stored as liquid)
	CLON	Onsite Generated Hypochlorite (no storage)
	CAGC	Chloramine (formed from gaseous chlorine)
	CAOF	Chloramine (formed from offsite hypochlorite)
	CAON	Chloramine (formed from onsite hypochlorite)
	CLDO	Chlorine Dioxide
	OZON	Ozone
	ULVL	Ultraviolet Light
	OTHD	All other types of disinfectant
	NODU	No Disinfectant Used
CollectionDate	Date of sample collection (month, day, year)	
SampleID	Identification code up to 30-characters for each sample, as defined by the laboratory	
Contaminant	Unregulated contaminant being analyzed in UCMR 3	
MRL	Minimum Reporting Level defined by UCMR 3	
MethodID	Identification code of the analytical method	

Contaminant	MRL (µg/L)	Reference Concentration (µg/L)	Reference Concentration based on a Cancer Endpoint (Y/N)	EPA Reference(s)
Chloromethane (methyl chloride)[5]	0.2	2.69 to 269	Y	CCL 3 Contaminant Information Sheets
Halon 1011 (bromochloromethane)[8]	0.06	90	N (chronic exposure)	2012 Edition of the Health Advisories Table
Bromomethane (methyl bromide)	0.2	140	N (chronic exposure)	Human Health Benchmark for Pesticides (HHBPs)
PFBS	0.09	NA		
PFHpA	0.01	NA		
PFHxS	0.03	NA		
PFNA	0.02	NA		
PFOS	0.04	0.2	N (short-term exposure)	2012 Edition of the Health Advisories Table
PFOA	0.02	0.4	N (short-term exposure)	2012 Edition of the Health Advisories Table
17α-ethynylestradiol (ethinyl estradiol)[9]	0.0009	0.035	N (chronic exposure)	CCL 3 Contaminant Information Sheets
17β-estradiol (estradiol)[5]	0.0004	0.0009 to 0.09	Y	CCL 3 Contaminant Information Sheets
Equilin	0.004	0.35	N (chronic exposure)	CCL 3 Contaminant Information Sheets
Estriol (16-α-hydroxyestradiol)	0.0008	0.35	N (chronic exposure)	CCL 3 Contaminant Information Sheets
Estrone	0.002	0.35	N (chronic exposure)	CCL 3 Contaminant Information Sheets
4-androstene-3,17-dione	0.0003	NA		
Testosterone	0.0001	NA		

[8] The 2012 Edition of the Health Advisories Table and the CCL 3 Contaminant Information Sheets (70 µg/L) have slightly different numbers due to rounding.
[9] This corrects the CCL 3 Contaminant Information Sheets reference level (originally listed as 0.28 µg/L).

Contaminant	Contaminant Full Name	CAS[1] Number	Method ID	Method Name	Monitoring Requirement
1,2,3-trichloropropane	1,2,3-trichloropropane	96-18-4	524.3	Volatile Organic Compounds	AM
1,3-butadiene	1,3-butadiene	106-99-0	524.3	Volatile Organic Compounds	AM
Chloromethane	methyl chloride	74-87-3	524.3	Volatile Organic Compounds	AM
1,1-dichloroethane	1,1-dichloroethane	75-34-3	524.3	Volatile Organic Compounds	AM
Bromomethane	methyl bromide	74-83-9	524.3	Volatile Organic Compounds	AM
HCFC-22	chlorodifluoromethane	75-45-6	524.3	Volatile Organic Compounds	AM
Halon 1011	bromochloromethane	74-97-5	524.3	Volatile Organic Compounds	AM
1,4-dioxane	1,4-dioxane	123-91-1	522	Synthetic Organic Compound	AM
Vanadium	vanadium	7440-62-2	200.8	Metals	AM
Molybdenum	molybdenum	7439-98-7	200.8	Metals	AM
Cobalt	cobalt	7440-48-4	200.8	Metals	AM
Strontium	strontium	7440-24-6	200.8	Metals	AM
Chromium	total chromium	N/A	200.8	Metals	AM
Chromium-6	chromium-6	18540-29-9	218.7	Chromium-6	AM
Chlorate	chlorate	14866-68-3	300.1	Oxyhalide Anion	AM
PFOS	perfluorooctanesulfonic acid	1763-23-1	537	Perfluorinated Compounds	AM
PFOA	perfluorooctanoic acid	335-67-1	537	Perfluorinated Compounds	AM
PFNA	perfluorononanoic acid	375-95-1	537	Perfluorinated Compounds	AM
PFHxS	perfluorohexanesulfonic acid	355-46-4	537	Perfluorinated Compounds	AM
PFHpA	perfluoroheptanoic acid	375-85-9	537	Perfluorinated Compounds	AM
PFBS	perfluorobutanesulfonic acid	375-73-5	537	Perfluorinated Compounds	AM
17β-estradiol	estradiol	50-28-2	539	Hormones	SS
17α-ethynylestradiol	ethinyl estradiol	57-63-6	539	Hormones	SS
Estriol	16-α-hydroxyestradiol	50-27-1	539	Hormones	SS
Equilin	equilin	474-86-2	539	Hormones	SS
Estrone	estrone	53-16-7	539	Hormones	SS
Testosterone	testosterone	58-22-0	539	Hormones	SS
4-androstene-3,17-dione	4-androstene-3,17-dione	63-05-8	539	Hormones	SS

[1]Chemical Abstract Service

Under the current cycle of the Unregulated Contaminant Monitoring Rule (UCMR 3) chemicals are being studied at levels that are often significantly below those in prior UCMR cycles. Importantly, UCMR 3 minimum reporting levels (MRLs) were established based on the capability of the analytical method, not based on a level established as "significant" or "harmful." In fact, the UCMR 3 MRLs are often below current "health reference levels" (to the extent that HRLs have been established).

Results of UCMR 3 measurements should be interpreted accordingly. The detection of a UCMR 3 analyte above the MRL does not represent cause for concern, in and of itself. Rather, the implications of the detection should be judged considering health effects information (which is often still under development or being refined for unregulated contaminants).

The intent of the following table is to identify draft UCMR reference concentrations, where possible, to provide context around the detection of a particular UCMR contaminant above the MRL. The draft reference concentration does not represent an "action level" (EPA requires no particular action[1,2] based simply on the fact that UCMR monitoring results exceed draft reference concentrations), nor should the draft reference concentration be interpreted as any indication of an Agency intent to establish a future drinking water regulation for the contaminant at this or any other level. Decisions as to whether or not to regulate the contaminant in drinking water will continue to be made following the Agency's Regulatory Determination process:
[http://water.epa.gov/scitech/drinkingwater/dws/ccl/index.cfm].

The following key principles guided the development of the table:

(1) The reference concentrations are based on publically-available health information found in the following EPA resources: 2012 Drinking Water Standards and Health Advisories, the CCL 3 Contaminant Information Sheets or the Human Health Benchmark for Pesticides (HHBPs). The primary/secondary sources of health information vary in respect to scientific rigor from health assessment to single studies and are cited in the table.
(2) If health information was available from more than one of the EPA resources listed above, the most recent health information was used for the draft reference concentrations.
(3) Where both cancer and non-cancer draft reference concentrations existed, the lower (more conservative) of the two concentrations was used. For chemicals with reference concentrations based on a cancer endpoint, the table presents a range of values associated with 10^{-6} to 10^{-4} cancer risk. For chemicals with reference concentrations based on a non-cancer endpoint, the duration of exposure (short-term, intermediate/long-term, chronic) of the toxicity factor (e.g. Reference Dose) used as the basis for the reference concentration is shown.

Recognizing that additional health effects information will become available over time, EPA will periodically update the following table. Those attempting to assess UCMR occurrence data are encouraged to visit EPA's website for the most recent information.

[1] Consumer Confidence Report (CCR) and Public Notification (PN) reporting requirements (see 40 CFR 141.153(d) and 141.207, respectively) apply to public water systems; CCR requires particular reporting based on measurements relative to the UCMR method reporting limits (MRLs) defined in 40 CFR 141.40.
[2] States may establish requirements for drinking water contaminants not yet regulated by EPA, and those requirements may be based on State-established levels that differ from EPA's reference concentrations. Public Water Systems are responsible for being aware of and complying with their State's requirements, if any.

Contaminant	*MRL (µg/L)*	*Reference Concentration (µg/L)*	*Reference Concentration based on a Cancer Endpoint (Y/N)*	*EPA Reference(s)*
Cobalt[1]	1	70	N (intermediate exposure)	CCL 3 Contaminant Information Sheets
Molybdenum[2]	1	40	N (chronic exposure)	2012 Edition of the Health Advisories Table
Strontium[3]	0.3	4000	N (chronic exposure)	2012 Edition of the Health Advisories Table
Vanadium[1,4]	0.2	21	N (intermediate exposure)	CCL 3 Contaminant Information Sheets
Chromium (Total)	0.2	100	N (chronic exposure)	The MCL for the National Primary Drinking Water Regulation
Chromium-6[1]	0.03	NA		
Chlorate	20	210	N (chronic exposure)	CCL 3 Contaminant Information Sheets
1,4-dioxane[5]	0.07	0.35 to 35	Y	2012 Edition of the Health Advisories Table
1,1-dichloroethane[5]	0.03	6.14 to 614	Y	CCL 3 Contaminant Information Sheets
1,2,3-trichloropropane[5,6]	0.03	0.0004 to 0.04	Y	2013 Edition of the Health Advisories Table
1,3-butadiene[5,6]	0.1	0.0103 to 1.03	Y	CCL 3 Contaminant Information Sheets
HCFC-22 (chlorodifluoromethane) [7]	0.08	NA		

[1] The contaminant is on the IRIS 2012 Agenda for either a new assessment or an updated assessment (Federal Register Notice May 7, 2012).

[2] The 2012 Edition of the Health Advisories Table and the CCL 3 Contaminant Information Sheets (35 µg/L) have slightly different numbers due to rounding.

[3] The 2012 Edition of the Health Advisories Table and the CCL 3 Contaminant Information Sheets (4200 µg/L) have slightly different numbers due to rounding.

[4] The ATSDR, 1992 used for the CCL 3 Contaminant Information Sheets is no longer publically available and has been replaced by a new assessment (ATSDR, 2013). The minimum risk level (RfD equivalent) was 0.003 mg/kg/day for minor renal effects in an animal study (ATSDR, 1992) compared to 0.01 mg/kg/day for lack of minor effects in blood pressure, body weight, and hematological parameters in a human study with a 12 weeks exposure (ATSDR, 2013).

[5] Reference Concentration range based on cancer risk of 10^{-6} to 10^{-4}.

[6] 10^{-6} cancer risk < MRL < 10^{-4} cancer risk.

[7] The CCL 3 Contaminant Information Sheets provide a reference level of 31.5 µg/L; the number is based on a single LOAEL from a 1983 study.

Field Name	Definition	
AnalyticalResultsSign	Less than (<) the minimum reporting requirement (MRL) or equal to (=) a numeric value at or above the MRL	
AnalyticalResultValue	Numeric value of the analytical result (ppb), null values represent less than MRL	
SampleEventCode	Identification code for each sample event. Includes sample event one (SE1), sample event two (SE2), sample event three (SE3), and sample event four (SE4). All source types report for SE1 and SE2, additionally surface water systems and ground water under the direct influence of surface water systems report for SE3 and SE4.	
MonitoringRequirement	AM	Assessment Monitoring (List 1)
	SS	Screening Survey (List 2)
Region	EPA Region	States
	1	CT, ME, MA, NH, RI, VT
	2	NJ, NY, PR (Puerto Rico), VI (Virgin Islands)
	3	DE, DC, MD, PA, VA, WV
	4	AL, FL, GA, KY, MS, NC, SC, TN
	5	IL, IN, MI, MN, OH, WI
	6	AR, LA, NM, OK, TX
	7	IA, KS, MO, NE
	8	CO, MT, ND, SD, UT, WY
	9	AZ, CA, HI, NV, AS (American Samoa), GU (Guam), MP (Northern Marianas Islands), NN (Navajo Nation)
	10	AK, ID, OR, WA
State	State abbreviation	
ZipCode	U.S. Postal Service Zip Code(s) for all areas being served water by a PWS	

Terms

a) UCMR Draft Reference Concentration = The reference concentrations are based on publically-available health information found in the following EPA resources: 2012 Drinking Water Standards and Health Advisories, the CCL 3 Contaminant Information Sheets or the Human Health Benchmark for Pesticides (HHBPs). The primary/secondary sources of health information vary in respect to scientific rigor from health assessment to single studies. Many of the contaminants are currently under regulatory review or development and are subject to change as new health assessments are completed.
b) MRL = UCMR Minimum Reporting Level. *[Note that the Agency for Toxic Substances & Disease Registry (ATSDR) uses the term "MRL" for a different purpose (i.e., to describe "Minimal Risk Levels"). The UCMR term and the ATSDR term have no relationship to each other.]*
c) MCL = Maximum Contaminant Level. The highest level of a contaminant allowed in drinking water. MCLs are enforceable standards.
d) Cancer Risk of 10^{-6} to 10^{-4} = the concentration of a contaminant in drinking water corresponding to an excess estimated lifetime cancer risk of one-in-a-million ($1x\ 10^{-6}$) to one-in-ten-thousand (1×10^{-4}). The 2012 Drinking Water Standards and Health Advisories provide the cancer risk at 1×10^{-4}. The CCL 3 Contaminant Information Sheets provide the cancer risk at $1x\ 10^{-6}$.
e) LOAEL = Lowest Observed Adverse Effect Level
f) NA = Not Available
g) Short-term = Typically refers to animal toxicological studies with an exposure duration of days to weeks.
h) Intermediate/Longer-term = Typically refers to animal toxicological studies with an exposure duration of weeks to months.
i) Chronic = Typically refers to animal toxicological studies with an exposure duration of months to years; representing a lifetime exposure in humans.

References

j) 2012 Drinking Water Standards and Health Advisories (http://water.epa.gov/action/advisories/drinking/upload/dwstandards2012.pdf)
k) CCL 3 Contaminant Information Sheets (http://www.epa.gov/ogwdw/ccl/pdfs/ccl3_docs/Final%20CCL%203%20Contaminant%20Information%20Sheets.pdf)
l) Human Health Benchmark for Pesticides (HHBPs) (http://iaspub.epa.gov/apex/pesticides/f?p=HHBP:home:393314189505)

Field Name	Definition	
PWSID	Public Water System Identification Code, 9-character identification code (Begins with the standard 2-character postal State abbreviation or Region code, and the remaining seven numbers are unique to each PWS in the state)	
PWSName	Name of the Public Water System (PWS)	
Size	Size category of the PWS for UCMR, based on retail population as of December 31, 2010	
	VS	<500
	S	501-3300
	M	3301-10000
	L	10001-50000
	VL	50001-100000
	XL	>100000
FacilityID	Public Water System Facility Identification Code, 5-digit identification code	
FacilityName	Name of the facility at the PWS	
FacilityWaterType	Source of water at the facility	
	SW	Surface water
	GW	Ground water
	GU	Ground water under the direct influence of surface water
	MX	Any combination of: SW, GW and GU
SamplePointID	Identification code for each sample point location in the PWS	
SamplePointName	Name of the sample point for every sample point ID at a PWS	
SamplePointType	Sampling Point Type Code	
	EP	Entry point to the distribution system
	MR	Distribution system at maximum residence time