



Unregulated Contaminant Monitoring Regulation Guidance for Operators of Public Water Systems Serving 10,000 or Fewer People

Foreword

This document provides guidance to owners and operators of small public water systems (systems serving 10,000 or fewer people) on the requirements of the revised Unregulated Contaminant Monitoring Regulation (UCMR) Program. The data collected through this program will be used to support the development of the Contaminant Candidate List (CCL), to support the Administrator's determination of whether to regulate a contaminant, and to develop future regulations. The revised monitoring program is one of the cornerstones of the sound science approach to future drinking water regulation which is one of the goals of the 1996 SDWA Amendments.

Please Note: A draft of this document was released for public comment as EPA 815-R-99-005. This final guidance document is being released as EPA 815-R-01-002. Because of the evolving nature of the UCMR Program, supplemental rule-making efforts may add additional contaminants to be monitored and hence, additional sampling and analytical procedures may need to be identified. If EPA issues additional UCMR rules, EPA will issue supplemental guidance to owners and operators of small public water systems explaining the new requirements.

Under §1445(a)(2)(A) of the Safe Drinking Water Act (SDWA), as amended in 1996, the EPA was required to develop regulations for an unregulated contaminant monitoring program by August 1999. The 1996 SDWA Amendments direct a substantially revised UCMR. The revised UCMR contains a new list of contaminants and changes the number of public water systems (PWSs) that must conduct monitoring and the frequency and schedule for monitoring (§141.40(a)). Additional regulatory actions also include the cancellation of unregulated contaminant monitoring for small systems serving 10,000 or fewer people that was required under the previous unregulated contaminant monitoring program.

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Section 1. Introduction

The Unregulated Contaminant Monitoring Regulation (UCMR) establishes a program for monitoring contaminants that are not currently monitored by public water systems (PWSs) under the requirements of the Safe Drinking Water Act (SDWA). The Environmental Protection Agency (EPA) was required to establish criteria for a revised monitoring program for unregulated contaminants under §1445 of the SDWA, as amended in 1996. EPA was further required to publish a list of contaminants to be monitored under the revised UCMR by August 1999. The National Drinking Water Contaminant Occurrence Database (NCOD), also established by the 1996 Amendments to the SDWA, will be used to store and analyze data collected under the UCMR.

EPA published the revised UCMR on September 17, 1999 (64 FR 50556). This revised rule replaces the regulations currently in 40 CFR §§141.35, 141.40, and 142.15(c)(3) and modifies §142.16. The revisions generally cover the following: (1) the frequency and schedule for monitoring based on PWS size, water source, and likelihood of finding the contaminants; (2) a new, shorter list of contaminants to be monitored; (3) procedures for selecting and monitoring a national representative sample of small systems (systems serving 10,000 or fewer people), and; (4) procedures for placing the monitoring data in the NCOD, as required under §1445. The data generated by this rule will be used to support the development of the Contaminant Candidate List (CCL), the Administrator's determination of whether or not to regulate a contaminant, and to develop drinking water regulations. The revised UCMR Program is a cornerstone of the sound science approach to future drinking water regulation, which is one of the aims of the SDWA Amendments.

The purpose of this document is to provide guidance to small PWSs selected to participate in the national representative sample of small systems under the revised UCMR Program. The guidance is designed to implement national policy on these issues. Of the approximately 65,000 small PWSs eligible nationwide, only 800 PWSs serving 10,000 or fewer people have been randomly selected to participate in the first component of UCMR monitoring. This guidance provides a general description of the UCMR Program as it affects small systems and identifies the sampling and reporting responsibilities of small PWSs selected to participate in the Assessment Monitoring component of the revised UCMR Program. This guidance also highlights important changes in the UCMR which reduce the monetary and administrative burden on small systems. It is important to note that this guidance outlines the sampling and reporting responsibilities only for UCMR Assessment Monitoring (List 1) contaminants. EPA will be issuing further guidance outlining the responsibilities of small PWSs selected to monitor for List 2 (Screening Survey) contaminants, which was finalized with the publication of the UCMR List 2 rule in early January 2001 (66 FR 2273). Further guidance will also be issued for List 3 (Pre-Screen Testing), after analytical methods for these contaminants have been promulgated.

The SDWA provisions and EPA regulations described in this document contain legally binding requirements. This document does not substitute for those provisions or regulations, nor is it a regulation itself. It does not impose legally-binding requirements on EPA, States, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA and State

decisionmakers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular facility will be made based on the applicable statutes and regulations. Therefore, interested parties are free to raise questions and objections about the appropriateness of the application of this guidance to a particular situation, and EPA will consider whether or not the recommendations or interpretations in the guidance are appropriate in that situation based on the law and regulations. EPA may change this guidance in the future without notice or an opportunity for comment. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Section 2. Background Information and Monitoring Guidelines

2.1 How Does Monitoring Differ From the Previous Unregulated Contaminant Monitoring Program?

EPA published a Direct Final Rule in the January 8, 1999 *Federal Register* (64 FR 1493), separate from the new UCMR, that canceled the third round of unregulated contaminant monitoring for small systems under the previous program. As some small systems would have been subject to this third round of monitoring in 1999 and 2000 under the previous program, this monitoring was canceled to reduce costs to small systems. The cancellation of this third round of monitoring does not affect the reliability of the data already collected under the previous program. As required under the 1996 amendments to SDWA, EPA made numerous changes to the previous unregulated contaminant monitoring program. The most important changes relating to small PWS responsibilities under the revised UCMR Program are discussed briefly below. These issues will be discussed in more detail throughout this guidance document.

1. The revised UCMR Program includes a group of 28 chemical and 8 microbiological contaminants on the UCMR (1999) List. This new list of contaminants is shown in Table 1 and is comprised of three monitoring components: Assessment Monitoring (sampling and analyzing for List 1 contaminants); Screening Survey (for List 2 contaminants); and Pre-Screen Testing (for List 3 contaminants). Many of the contaminants on these lists are emerging contaminants about which little is known of their occurrence nationally, or their potential human health effects. Although there are currently 36 contaminants on these three lists, no more than 30 contaminants will be monitored during any 5-year UCMR listing cycle.
2. Under previous unregulated contaminant monitoring, systems with fewer than 150 service connections were waived from monitoring, provided they made their facilities available for the States to monitor. These systems may now be required to monitor for unregulated contaminants if they are selected as part of the national representative sample of small systems under the revised UCMR Program (§141.40(a)(1)(iv)). In the revised program, only a nationally representative sample of 800 small systems are required to monitor. As fewer systems will monitor under the revised program, a much smaller burden to the community of small PWSs will be imposed than under the previous unregulated contaminant monitoring program.
3. EPA will pay for the monitoring and reporting costs of small PWSs in the revised UCMR. Small systems will be required to collect water samples, but EPA will pay the costs of shipping samples to the laboratory and sample analysis (§141.40(a)(4)(iii)).
4. Since the goal of the UCMR is to collect occurrence data to estimate human exposure to contaminants, information on the lack of contaminant occurrence is equally as important as information on the presence of such a contaminant. Because of this, small PWSs selected to

participate in the national representative sample will not be eligible for unregulated contaminant monitoring waivers.

5. PWSs were previously required to report unregulated contaminant monitoring results to EPA and/or the States. In the revised UCMR, the EPA-designated laboratories will report the results of contaminant monitoring to EPA for the small PWSs selected as part of the national representative sample. EPA is not requiring that the data be reported to the State, but does require that the State receive a copy of the data (§141.35(b)).

Table 1. Contaminants on the UCMR (1999) List		
List 1 Contaminants		
2,4-dinitrotoluene	DDE	MTBE
2,6-dinitrotoluene	DCPA di-acid degradate	Nitrobenzene
Acetochlor	EPTC	Perchlorate
DCPA mono-acid degradate	Molinate	Terbacil
List 2 Contaminants		
1,2-diphenylhydrazine	Diazinon	Prometon
2-methyl-phenol	Disulfoton	RDX
2,4-dichlorophenol	Diuron	Terbufos
2,4-dinitrophenol	Fonofos	<i>Aeromonas hydrophila</i>
2,4,6-trichlorophenol	Linuron	
Alachlor ESA	Nitrobenzene (low-level)	
List 3 Contaminants		
Lead-210	Cyanobacteria (blue-green algae), other fresh water algae, and their toxins	Echoviruses
Polonium-210	Caliciviruses	<i>Helicobacter pylori</i>
Adenoviruses	Coxsackieviruses	Microsporidia

Contaminants on UCMR (1999) List 1 will be monitored under the Assessment Monitoring component of the revised UCMR Program, contaminants on UCMR (1999) List 2 will be monitored under the Screening Survey component of the revised UCMR Program, and UCMR (1999) List 3 contaminants will be monitored under the Pre-Screen Testing component of the revised UCMR Program. This table reflects the final UCMR (1999) List, as published in the September 17, 1999 *Federal Register* (64 FR 50556), as well as the revisions included in the Perchlorate and Acetochlor Rule published in the March 2, 2000 *Federal Register* (65 FR 11372), and the final List 2 Rule and clarifications to the UCMR, published on January 11, 2001 (66 FR 2273).

2.2 Who Should Follow This Guidance?

This guidance applies only to small PWSs that are selected as part of the national representative sample under the Assessment Monitoring component of the revised UCMR Program. Only selected community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) that are notified by their State, EPA, or a contractor assisting EPA with UCMR implementation will be included in this representative group and will be required to participate in this Assessment Monitoring sampling (§141.40(a)(1)(iv)). Transient non-community water systems (TNCWSs) will not be included in this monitoring. Approximately 800 systems have been randomly selected from the population of approximately 65,000 small CWSs and NTNCWSs that were eligible.

2.3 How Were Small Systems Selected to Participate in the National Representative Sample?

Section 1445(a)(2) of SDWA mandates that only a representative sample of small PWSs may be required to monitor for unregulated contaminants. The representative sample must be large enough to adequately represent the true population of small PWSs across the nation. Thus the monitoring results from the representative sample of small systems must provide valid contaminant occurrence information upon which EPA can base regulatory decisions, while at the same time, minimizing the monetary burden to small systems.

EPA developed a statistically-sound process to randomly select 800 small systems to participate in this national representative sample. To ensure that the number of systems in the national representative sample reflect the total population of small PWSs across the nation, the national sample was randomly selected and weighted by the population served, the source of water (ground water or surface water), and geographic location (State). A sample size of 800 small PWSs (CWSs and NTNCWSs) is adequate to provide a 99% likelihood that the random sample represents the actual population of these small PWSs across the nation. In other words, there is only 1 chance in 100 that the monitoring results will not be representative of the entire population of small PWSs. For more information on the statistical design of the national representative sample, please refer to the document entitled *National Representative Sample of Small Water Systems: Statistical Design and State Plans for Unregulated Contaminant Monitoring* (EPA 815-R-99-003). This background document is available by calling the EPA Safe Drinking Water Hotline at (800) 426-4791, or by viewing it on EPA's Internet Homepage for the Office of Ground Water and Drinking Water (www.epa.gov/safewater).

2.4 For Which Contaminants Am I Required to Monitor?

You must collect samples for the 12 UCMR (1999) List 1 contaminants listed in Table 2 under the Assessment Monitoring component of the revised UCMR Program (§141.40(a)(1)(iv)). List 2 and List 3 contaminants (see Table 1) will be monitored under the Screening Survey and Pre-Screen Testing components of the revised UCMR Program, respectively. Monitoring requirements for the UCMR List 2 contaminants have been finalized, and were published in the *Federal Register* on January 11, 2001 (66 FR 2273). For those systems selected for the List 2 Screening Surveys, additional guidance will

be issued in the form of supplementary fact sheets and by way of the sampling instructions that you will be issued with the sampling kits. For more information on List 3 contaminant monitoring requirements, please refer to the UCMR (1999) Preamble and Rule (64 FR 50556). EPA will also issue additional guidance when monitoring is required for List 3 contaminants.

Table 2 lists the UCMR (1999) List 1 and List 2 contaminants for which monitoring is required under the Assessment Monitoring component of the UCMR Program, as well as their potential environmental sources (§141.40(a)(3)).

Table 2. Uses and Environmental Sources of UCMR (1999) List 1 and List 2 Contaminants	
<i>Contaminant Name</i>	<i>Use or Environmental Source</i>
List 1 Contaminants	
2,4-DNT	Used in the production of isocyanate, dyes, and explosives
2,6-DNT	Used as mixture with 2,4-DNT (similar uses)
Acetochlor	Herbicide used with cabbage, citrus, coffee, and corn crops
DCPA di-acid degradate	Degradation product of DCPA; an herbicide used on grasses and weeds with fruit and vegetable crops
DCPA mono-acid degradate	Degradation product of DCPA; an herbicide used on grasses and weeds with fruit and vegetable crops
DDE	Degradation product of DDT; a general insecticide
EPTC	Herbicide used on grasses and weeds, with potatoes and corn
Molinate	Selective herbicide used with rice; controls watergrass
MTBE	Octane enhancer in unleaded gasoline
Nitrobenzene	Used in the production of aniline, which is used to make dyes, herbicides, and drugs
Perchlorate	Oxygen additive in solid fuel propellant for rockets, missiles and fireworks
Terbacil	Herbicide used with sugarcane, alfalfa, and fruit crops
List 2 Chemical Contaminants	
1,2-diphenylhydrazine	Used in the production of benzidine and anti-inflammatory drugs
2-methylphenol	Released in automobile and diesel exhaust, coal tar and petroleum refining,

Table 2. Uses and Environmental Sources of UCMR (1999) List 1 and List 2 Contaminants	
<i>Contaminant Name</i>	<i>Use or Environmental Source</i>
2,4-dichlorophenol	Chemical intermediate in herbicide production
2,4-dinitrophenol	Released from mines, metal, petroleum, and dye plants
2,4,6-trichlorophenol	By-product of fossil fuel burning, used as bactericide and wood/glue preservative
Alachlor ESA and other acetanilide pesticides	Degradation product of alachlor and other acetanilide pesticides, herbicides generally used with corn, bean, peanut, and soybean crops to control grasses and weeds
Diazinon	Insecticide used with rice, fruit, vineyards, and corn crops
Disulfoton	Insecticide used with cereal, cotton, tobacco, and potato crops
Diuron	Herbicide used on grasses in orchards and wheat crops
Fonofos	Soil insecticide used on worms and centipedes
Linuron	Herbicide used with corn, soybean, cotton, and wheat crops
Nitrobenzene	Used in the production of aniline, which is used to make dyes, herbicides, and drugs
Prometon	Herbicide used on annual and perennial weeds and grasses
RDX (royal demolition explosive, hexahydro-1,3,5-trinitro-1,3,5-triazine)	Used in explosives; ammunition plants
Terbufos	Insecticide used with corn, sugar beet, and grain sorghum crops
List 2 Microbiological Contaminant	
<i>Aeromonas</i>	Present in all freshwater and brackish water

Refer to Table 1 for definitions of chemical abbreviations.

2.5 What are the Responsibilities of a System Selected to Participate in the National Representative Sample?

If your system is selected to participate in the national representative sample, you must collect samples at the times and locations specified by the revised UCMR (§141.40(a)(1)(iv)). These sampling specifications are outlined in this guidance and in further documentation to be provided to you by EPA, its UCMR contractor, or your State at the time you are notified of your selection.

You are responsible for collecting water samples and sending the samples to a laboratory designated by EPA to be analyzed for the contaminants of interest (§141.40(a)(4)(i)(A)). In some cases, your State may elect to conduct the sampling for you, especially if your State currently collects your water samples for regulated contaminant compliance monitoring. Your State will inform you of your responsibilities if the State elects to collect the water samples.

EPA will pay the costs of shipping sample bottles to the laboratory and the costs of laboratory analyses. You will not have to report monitoring results directly to EPA, since EPA will arrange to receive results electronically (or in another manner approved by EPA) from the EPA-designated laboratory, and will provide a copy of the results to you and your State. Participating small systems will have 30 days to review and comment on the data. Following this, EPA will wait 60 days before placing data for small PWSs in the NCOD to allow for further quality control review by you and your State. It is important to note that as a small PWS, you are still responsible for ensuring that monitoring results are reported to EPA and that a copy is sent to your State.

Small CWSs must also notify the public of UCMR monitoring results through annual Consumer Confidence Reports as required by 40 CFR §141.153(d). NTNCWSs are required to notify persons served by the system of the availability of UCMR results, within 12 months after the results are known, as required by the revised public notification rule (65 FR 25982), under 40 CFR §141.207. (Note: Because the revised public notification rule goes into effect at different times in different States, owners and operators should check with their State drinking water agency to determine which public notice requirements apply.)

2.6 When Will Sampling at the Selected Systems Begin?

The 800 systems selected for inclusion in the national representative sample will be notified by the State or EPA at least 90 days before sampling will begin. Each system will collect samples in only 1 of the 3 years of Assessment Monitoring (2001, 2002, or 2003). The State or EPA will specify the year in which you must monitor for the UCMR (1999) List 1 contaminants (§141.40(a)(5)(iii)(A)).

2.7 How Often Will I Need to Collect Samples?

Your monitoring schedule will be provided to you by the State, EPA, or EPA's UCMR implementation contractor. Each system in the national representative sample will collect samples for 1 year during the 3-year Assessment Monitoring period (2001 to 2003). Systems using surface water sources, or

ground water under the influence of surface water, must sample four times per year for 1 year during the Assessment Monitoring period (§141.40(a)(5)(iii)(A)). One of the sampling times must occur between May 1 and July 31, or another period of greatest vulnerability as specified by the State or EPA, and the other three sampling times must occur in the same relative month of each of the remaining quarters (§141.40(a)(5)(iii)(A)). For example, if a PWS collects samples in May (second month of the quarter), then the system must also sample in February, August, and November. Systems using ground water sources will sample two times per year for 1 year during the Assessment Monitoring period, with one of these sampling times occurring between May 1 and July 31, or another period of greatest vulnerability as specified by the State or EPA. The second set of samples for ground water systems must be collected 5 to 7 months before or after the vulnerable period sampling event (§141.40(a)(5)(iii)(A)). Approximately one-third of systems will monitor each year of the 3-year period.

2.8 Who Will Pay for the Monitoring?

EPA will pay for the costs associated with obtaining the necessary sampling bottles and containers, transporting the samples, and analyzing the samples at EPA contract laboratories. EPA will not reimburse systems for labor hours used to collect these samples or to ensure the results are reported to the public.

2.9 What Does it Mean to be Selected as an Index System?

An Index System is a small PWS that will monitor for UCMR (1999) List 1 contaminants every year for the entire UCMR 5-year cycle (2001 to 2005) to establish general information on small PWS operating conditions. Index System monitoring will provide more detailed information on variations in contaminant occurrence over time and under the various environmental and operating conditions unique to small systems. These data are being collected so that future regulations can better reflect small system characteristics and conditions. Only 30 small systems were chosen as Index Systems from the random sample of 800 small PWSs included in UCMR monitoring.

EPA will pay for Index System monitoring, including provisions for sampling equipment, sample shipment, testing, and analysis. In addition to paying for Index Systems, the State, EPA, an EPA contractor, or another federal agency assisting with UCMR implementation will send a field technician to each Index System to collect the samples. At the time of sampling, additional system information will be collected to characterize the environmental setting affecting the system including precipitation, land and water resource use, and environmental factors (such as soil type and geology). Index Systems will also be required to report information on system operating conditions (such as water source, pumping rates, and environmental setting)(§141.40(a)(6)). This information will assist EPA in more fully evaluating small system operations and future regulations of small systems. Systems selected as Index Systems will receive further guidance from EPA.

Index Systems will also receive an official UCMR sampling year for which monitoring results will be included in the NCOD. Monitoring results for all 5 years of the UCMR cycle will not be included

in the NCOD to avoid double counting systems and monitoring results. For a more detailed explanation of the way in which small systems were randomly selected for UCMR monitoring, please refer to the document entitled *National Representative Sample of Small Water Systems: Statistical Design and State Plans for Unregulated Contaminant Monitoring* (EPA 815-R-99-003).

2.10 What Laboratories Can Analyze UCMR Samples?

Only laboratories that are designated and on contract with by EPA may analyze the UCMR samples for small systems (§141.40(a)(4)(iii)). The EPA UCMR implementation and small system sampling coordination contractor, Great Lakes Environmental Center (GLEC), will send a sampling kit to your system, or to your State sampling coordinator, containing all required supplies and bottles for an individual sampling point. Included in this kit will be an express, overnight shipment air bill which will need to be affixed to the outside of the sampling kit and which will be pre-printed with the laboratory name, address, and EPA account number designated for the shipping charges. These specified laboratories will be approved by EPA for all appropriate monitoring methods required for use under the UCMR. EPA will have analytical services contracts in place with multiple laboratories to test Assessment Monitoring samples from small systems and Index Systems over the 5-year UCMR cycle. GLEC will provide sampling equipment and necessary instructions to small PWSs.

2.11 Do I Continue Monitoring for the Previous List of Unregulated Contaminants?

As of January 8, 1999 EPA canceled monitoring for the previous list of 48 unregulated contaminants for small PWSs. EPA canceled the last monitoring round under the previous unregulated contaminant monitoring program since this monitoring period will coincide with Assessment Monitoring under the revised UCMR. This will decrease the amount of overlap between these programs and reduce unnecessary costs to small PWSs.

2.12 Can the Samples I Collect for the UCMR also be Used to Meet my Standard Compliance Monitoring Requirements?

Maybe. Eleven of the twelve contaminants included for Assessment Monitoring on List 1 are organic compounds and will be analyzed by the EPA contract laboratories using EPA analytical methods that are approved for compliance monitoring. The original intent of the UCMR was to reduce the monitoring burden on public water systems and allow the concurrent analysis of the unregulated contaminants on List 1 while these systems were conducting standard compliance monitoring. If your State has established a specific compliance monitoring schedule to match the UCMR schedule or if your State does not object to your system adopting the UCMR monitoring schedule as an alternate to the standard compliance monitoring schedule established by your State, it may be possible for you to conduct concurrent monitoring. To confirm your eligibility for concurrent monitoring, contact your State drinking water program office.

If your State will allow this concurrent monitoring and EPA's contract laboratory has certification for your State to conduct standard compliance monitoring, your system will only be responsible for the additional cost of the laboratory reporting the compliance data to you and/or your State. As the analytical cost for UCMR monitoring will be covered by EPA, your system may benefit by only needing to pay the EPA contract laboratory any additional cost attributed to reporting your compliance monitoring results. If you are interested in conducting your standard compliance monitoring concurrent with your UCMR monitoring, first contact your State to confirm your eligibility, and then either contact Dan Hautman at EPA OGWDW's TSC, or GLEC.

Section 3. General Sampling Instructions

3.1 How Will I Obtain the Required Sampling Containers and Equipment?

EPA's UCMR small system implementation contractor, GLEC, will send a sampling kit to your system 1 to 2 weeks prior to the specific week scheduled for sample collection at your small system. If your State will collect these samples, the State sampling coordinator will receive these kits several weeks in advance along with a sampling schedule. The sample collection kit will include:

- 1) an insulated sample shipping container or containers;
- 2) all required sampling bottles;
- 3) U-TEK freeze packs to keep samples cool in transit back to the laboratory;
- 4) any chemicals needed to dechlorinate and/or preserve samples;
- 5) a pre-paid return shipping docket;
- 6) sample collection data forms; and
- 7) any additional instructions or materials needed for sample collection, dechlorination, and preservation.

GLEC will provide a telephone number for you to call if any of the sample collection kit components arrive damaged or if any other problems or questions arise during sample collection. Included in the sample kit instructions will be directions which specify that the U-TEK freeze packs must be placed in a freezer for a minimum of 24 hrs prior to collection of samples. These frozen U-TEK freeze packs should then be placed in the shipping containers when returning the collected samples to the laboratories (§141.40(a)(5)(iii)(D)).

3.2 What Must I Do If I Receive Two Sample Collection Kits?

If you are collecting the samples for your system, you will receive at least one sampling kit for each sampling point. Some kits will be specifically designed to hold additional bottles which will need to be collected for quality control purposes. In addition, to ensure consistent, high-quality results for the UCMR, two identical sampling kits will be sent for 10% of all sampling points. This identical kit will be sent to a second laboratory for analysis. By collecting an identical set of samples but sending the samples to different laboratories for analysis, the consistency of results between laboratories can be monitored. If you receive two sample kits, you must collect the samples for each kit simultaneously, and you must return each kit to the laboratory specified on the pre-paid return shipping docket contained in each kit (§141.40(a)(5)(iii)(F)).

3.3 How Do I Conduct the Sampling?

In general, the methods used for sample collection and preservation will be very similar to the methods used for compliance sampling. As with compliance sampling, you should follow all safety and chemical handling instructions provided by GLEC when collecting samples for the UCMR.

To ensure accurate data for the UCMR, the specific sampling instructions included in the sample collection kits should be followed. In addition, you should take all necessary precautions identified by the laboratory to avoid contamination of your samples. These precautions will include avoiding activities such as handling gasoline, cleaning solvents, or disinfection chemicals immediately prior to sample collection. GLEC will provide specific sample collection instructions with the sampling kit.

3.4 Where Do I Collect the Required UCMR Samples?

You must collect UCMR samples at the locations specified in the regulation and described in this guidance (§141.40(a)(5)(iii)(B)). For contaminants on the UCMR (1999) List 1, samples must be collected at entry points to the distribution system (EPTDSs) representing each non-emergency water source in routine use over the 12-month period of monitoring, unless the State has specified other sampling points that are used for compliance monitoring under 40 CFR §§ 141.24(f)(1), (2), and (3) (§141.40(a)(5)). Thus, UCMR samples will most often be collected from the EPTDS. However, if the State has specified that source water sampling points are to be used for standard compliance monitoring, these UCMR samples may need to be collected from the source (raw) water. The State or EPA will include detailed sample location instructions in their notification to the system, and GLEC will also include these sampling instructions in each sample collection kit sent to you.

If monitoring at source water sampling points indicates detection of any of the contaminants on the monitoring list, then you must shift sample collection to the EPTDS for all future monitoring under the UCMR, unless the State or EPA determines that no treatment or processing was in place that would affect the measurement of the contaminants. In that case, the sampling at the EPTDS would not be required (§141.40(a)(5)). The requirement for UCMR samples to be collected at the EPTDS follows the existing regulatory approach and provides data for exposure assessment.

For other aspects of the UCMR (such as the Screening Survey or Pre-Screen Testing), you may be required to collect samples from other sampling points. These sampling points may include the point in the distribution system with the longest residence time and/or the point in the distribution system with the lowest residual disinfectant level. When monitoring at any additional sampling points is required, further guidance will be provided by EPA or the State.

3.5 What Quality Control Requirements Must I Follow During Sample Collection?

There are three general types of quality control requirements that apply to sample collection:

1. You must collect all samples using the sampling procedures specified by the UCMR, identified by GLEC and presented in this guidance (§141.40(a)(5)(iii)(E)). For all contaminants other than perchlorate, a dechlorinating agent will be placed in the sample collection bottle, therefore, do not rinse sample bottles as they are collected.
2. Some samples will be collected in duplicate or triplicate. When duplicate (or triplicate)

samples are required, both (or all three) samples should be collected using the exact same sample collection, dechlorination, and preservation procedures unless otherwise instructed by GLEC (§141.40(a)(4)(iii)). Duplicate and triplicate samples will be used to verify the precision and accuracy of analytical measurements determined at the laboratory. Detailed instructions will be provided by the laboratory in the sampling kit specifying which samples must be collected in duplicate or triplicate (§141.40(a)(5)(iii)(E)).

3. Field Reagent blanks (sometimes referred to as Shipping or Travel blanks) will be included in the sampling kit provided by GLEC. These blanks contain clean water, and are used to determine if samples have been contaminated in the field or during the shipping process. Do not open the blanks at any time. Do not remove these designated blank samples from the sampling kit.

3.6 What Documentation Is Required at the Time of Sampling?

You should complete and then submit all sampling forms in the shipping container when you ship the container and samples back to the designated EPA contract laboratory. For the first sampling kit you receive, you will be required to fill out Data Elements 1 - 3 on the sampling form provided (§141.40(a)(5)(iii)(G)). The UCMR data elements are discussed in Section 5. For all sampling kits received thereafter, many of the data elements will be pre-printed by GLEC on the sampling forms, but you should still check and confirm that all information on the sampling form is correct. For every sampling event, you will be required to record and report Data Element 3, Sample Collection Date, on the sampling form provided by the laboratory (§141.40(a)(5)(iii)(G)). It is also important that you ensure that all numbers on the sampling forms match the numbers on the sample bottles. In addition, you should note any problems or unusual circumstances related to sampling in the appropriate areas specified on the forms. If significant problems arise, such as accidentally broken bottles, do not substitute components of the kit with those available at your system: call GLEC at the number provided and have a replacement sampling kit sent to your facility.

3.7 How Do I Send the Samples and Sampling Forms to the Designated Laboratory?

You should send the samples, along with the sampling forms, to the laboratory for analysis immediately following collection and preservation. Place the collected samples (and completed sampling forms), along with the frozen U-TEK freeze packs, into the insulated shipping container included in the sample collection kit. The frozen U-TEK freeze packs will keep the samples chilled at approximately 4° C during shipment. However, samples should not be allowed to freeze during transport: use only the number of U-TEK freeze packs provided and designated by GLEC. Follow the specific sample packing instructions that will be provided by GLEC in the sample collection kit.

After the samples are packed, immediately ship the samples and accompanying documentation to the designated EPA contract laboratory via overnight delivery. Pre-paid shipping forms for overnight delivery will be provided by the laboratory in the sample collection kits. You should schedule sample

container pick-up or drop-off with the designated shipping company to ensure that samples are shipped on the same day of collection.

3.8 How Soon Must I Return the Collected Samples to the EPA-Designated Laboratory?

You must collect, pack, and ship samples in the same day. Therefore, you must collect samples early enough in the day to ensure same-day shipment (§141.40(a)(5)(i)(A)). Furthermore, you must collect and ship samples early enough in the week (i.e., not on Friday, Saturday, or Sunday) so that samples can be received and processed by the laboratory within 30 hours of sample collection (§141.40(a)(5)(i)(A)).

3.9 How Much Flexibility Do I Have Regarding the Timing of Sample Collection?

For systems selected as part of the national representative sample of small systems, samples should be collected within the week identified by GLEC. If this is not convenient, contact GLEC regarding the possibility of altering the sampling schedule to a different week within the prescribed sampling month.

3.10 When Would Resampling be Necessary?

Sample containers may occasionally break during shipment to the laboratory. If a sample container breaks, it will be necessary to collect the samples a second time. You may also need to resample if, at the determination of the EPA contract laboratory, samples previously collected and shipped to the laboratory were improperly collected or shipped. Resampling will also be necessary if you do not ship the samples back to the laboratory within the specified holding time for the samples. GLEC will send you additional sample collection kits and instructions for resampling when necessary. Resampling should be conducted within the same month as the original sampling event, or, at the latest, within the same quarter.

Section 4. Sampling Procedures

Sampling procedures for samples collected under the Assessment Monitoring component of the UCMR are contaminant- and method-specific. These procedures, as outlined below, must be followed for all samples collected for the UCMR (§141.40 Appendix A). These instructions will be reproduced and also included in the sample collection kit sent to you by GLEC.

4.1 My System's Sampling Kit Just Arrived. What Do I Need to Do with this Kit?

STEP #1A: Initially, locate a sampling kit contents checklist to insure that all the required components of the kit are included. Check off each item to be sure you have received all the necessary items. If any items are missing or broken, please contact Great Lakes Environmental Center (GLEC).

STEP #2A: You should receive at least one sampling kit for each UCMR sampling point at your facility. Be sure the sampling point indicated on the sample tracking form included in the kit matches the point you will be sampling. If you do not receive a sampling kit for each sampling point, please contact GLEC as above. Typically, these sampling points are those locations where your typical compliance monitoring samples are collected.

STEP #3A: Leave the white, Styrofoam cooler wrapped in the plastic bag in the cardboard box and simply fold down the plastic to access the top of the cooler. Retain the Ziploc plastic bag, which holds all the required paperwork associated with the sampling kit including sampling instructions and sample tracking form, for future use during sampling and for subsequent shipment with the samples to the laboratory.

STEP #4A: CRITICAL – You will need to place the U-TEK freeze packs into a freezer for at least 24 hours (48 hours, if possible) prior to collecting samples. Lay the U-TEK freeze packs flat in the freezer so that they retain close to their original shape (for easy packing with samples) and do not freeze in a deformed shape. DO NOT COLLECT AND SHIP THE SAMPLES IF THE U-TEK FREEZE PACKS ARE NOT COMPLETELY FROZEN. SAMPLES RECEIVED AT THE LABORATORY WARM WILL BE INVALID AND NECESSITATE RE-SAMPLING.

STEP #5A: Samples should be collected during the assigned sampling week. Samples **SHOULD BE** collected on Monday, Tuesday, or Wednesday, or as a last resort, on Thursday. Samples **MUST NOT** be collected on Friday, Saturday, or Sunday (§141.40(a)(5)(i)(A)). If for any reason, you cannot collect samples during your specified week, please contact GLEC.

STEP #6A: Read ALL the instructions before collecting samples.

4.2 The Scheduled Week for Me to Collect these UCMR Samples Has Arrived. What is the Exact Procedure that I Should Follow?

STEP #1B: Verify that the U-TEK freeze packs are completely frozen.

STEP #2B: Collect samples at least 2 or 3 hours before the time of your FedEx or UPS pick-up.

STEP #3B: Wear the latex gloves while collecting the samples to avoid contamination.

STEP #4B: At each sample point, remove any aerators which may be attached to the faucet or tap and let the water run for 10 minutes.

STEP #5B: Filling the sample bottles.

Each sample bottle is color-coded with a dot on the label. Fill and preserve each sample bottle according to the specific instructions (below) for each color. **DO NOT RINSE OUT ANY OF THE SAMPLES BOTTLES.** Collect all samples with the water running at a slow but steady stream (about the diameter of a pencil). Collect the sample directly from the tap, not through any hose or tubing.

GREEN dot (Method 314.0) : Fill the white, plastic, 125 mL sample bottle to the neck but not overflowing. Cap the bottle and place it into its original location in the sampling kit cooler. For this sample, **DO NOT ADD ANY ACID.**

LIGHT BLUE dot (Method 515.4): Fill the 250 mL amber glass bottle to the neck but not overflowing. Cap the bottle, invert it three or four times to mix the dechlorinating agent, and place it back into its original location in the sampling kit cooler. For this sample, **DO NOT ADD ANY ACID.**

YELLOW dot (Method 525.2): Fill the two glass, 1 liter sample bottles to the neck but not overflowing. Cap each bottle and gently invert it three or four times to mix the dechlorinating agent. (**DO NOT SHAKE**) Wait one minute, open the bottles, and using the graduated plastic eye dropper, add 4 mL (fill the dropper 4 times to the 1 mL mark) of acid from the plastic vial labeled 1:1 HCl to each 1 liter sample bottle. (**CAUTION:** Handle the acid very carefully. Wear the safety glasses and latex gloves. To prevent tipping the vial, hold it in one hand and the dropper in the other as you dispense the acid.) Cap each sample bottle tightly, and gently invert it three or four times to mix. Carefully and slowly open the sample bottle to release any formed carbon dioxide, then re-cap the bottle and place it back into its original location in the sampling kit cooler.

RED dot (Method 524.2): **THESE VIALS MUST BE FREE OF AIR BUBBLES WHEN THE SAMPLE COLLECTION PROCESS IS COMPLETE.** Fill the four glass, cylindrical 40 mL sample vials to within ½ inch of the top but not overflowing. (Leave the fifth, already filled 40 mL vial in its original location in the sampling kit cooler.) Cap the vials and gently invert

them three or four times to mix the dechlorinating agent. (DO NOT SHAKE) Wait one minute, open each vial, and using the graduated plastic dropper, add 4 or 5 drops of acid from the plastic vial labeled 1:1 HCl to each sample vial. (CAUTION: Handle the acid very carefully. Wear the safety glasses and latex gloves. To prevent tipping the vial, hold it in one hand and the dropper in the other as you dispense the acid.) Carefully, using the vial cap, add just enough water to completely fill the vials and form a meniscus (the curved surface of the water formed by surface tension). Cap the sample vials tightly, gently invert, and check for air bubbles in the vial. If there are any air bubbles present, carefully add additional water and check again for air bubbles. Place the vials back into their original locations in the sampling kit cooler.

STEP #6B: For all sample bottles, record on both the sample bottle label and on the sample tracking form, the sampling date and check off the appropriate box to verify that the acid preservative was added.

STEP #7B: Print and sign your name on the sample tracking form in the “sampled by” boxes.

4.3 Samples Have Been Collected and All the Required Information Has Been Recorded. What is the Procedure for Repacking the Sampling Kit and Shipping these Samples to the EPA Contract Laboratory?

STEP #1C: As samples are collected at the sampling point, place each sample bottle in the appropriate opening in the foam insert inside the respective cooler.

STEP #2C: Refer to the checklist for repacking the sampling kit to make sure all necessary items are re-packed into the cooler.

STEP #3C: Return the U-TEK freeze packs to the cooler as follows: place two (2) U-TEK freeze packs in the vertical spaces next to the 1L bottles on both sides of the cooler, place the piece of 1/4" foam on top of the bottles, place four (4) U-TEK freeze packs in a layer on top of the bottles.

STEP #4C: Place the lid on the cooler, pull the plastic bag up around the cooler and fold over the top of the bag.

STEP #5C: The person shipping the samples should print and sign his/her name on the sample tracking form in the “shipped by” boxes. Retain the bottom copy of the sample tracking form for your records.

STEP #6C: Place the top copy of the completed sample tracking form in the Ziplock plastic bag and place it on top of the cooler, inside the box.

STEP #7C: Close the cardboard box and seal it with shipping tape which has been provided.

STEP #8C: Remove as much of the old air bill label as possible from the outside of the box. Peel off the plastic backing from the pre-addressed FedEx (or UPS) air bill and affix it to the outside of the box in approximately the same location as the original air bill.

STEP #9C: Be sure that the cooler is shipped the SAME DAY the samples are collected, for EXPRESS overnight delivery the following morning at the laboratory.

Section 5. Specific Data Reporting Instructions

5.1 What Data Do I Need to Report?

Table 3 lists the 17 data elements that must be reported for each UCMR sample (§141.35(d)(3)). Many of these data elements are related to the quality of the analytical results and thus will be provided by the EPA contract laboratory analyzing your samples. At the time you collect the first samples for the revised UCMR Program, you may need to record Data Elements 1 and 2 (§141.40(a)(5)(iii)(G)). After this initial sample collection, these data elements will appear pre-printed on the sampling forms you receive from the laboratory for subsequent sampling. You should always check that the pre-printed information is correct. In addition, you are responsible for recording Data Element 3, Sample Collection Date, on the sample tracking form and on the collected sample bottles which will be delivered to the EPA contract laboratory after every sampling event (§141.40(a)(5)(iii)(G)).

All other data elements will be provided by the EPA contract laboratory analyzing your samples. While the EPA contract laboratory will electronically report your data to EPA for you, you will be responsible for ensuring that these data are reported to the public as part of your Public Notification and Consumer Confidence Reporting requirements (§141.207 and §141.153(d)), and that a copy is provided to your State (§141.35(b)).

5.2 What Will Happen After I Return the Sample Collection Kit to the Laboratory?

The EPA contract laboratory will process and analyze all samples submitted. EPA and/or GLEC will then provide you a copy of the data for your review. Your results will also be made available to your State drinking water agency via the internet. These results will include all of the data elements discussed above. Although GLEC will review the results and report them to you, you are still responsible for checking over the data, and ensuring that the data elements are correct and that EPA and the State receive your monitoring results.

Data Element	Definition
1. Public Water System (PWS) Identification Number	The code used to identify each PWS. The code begins with the standard two-character postal State abbreviation; the remaining seven characters are unique to each PWS.
2. Public Water System Facility Identification Number - Sampling Point Identification Number and Sampling Point Type Identification	The Sampling Point Identification Number and Sampling Point Type Identification should either be static or traceable to previous numbers and type identifications throughout the period of unregulated contaminant monitoring. This identification number is a three-part alphanumeric designation, made up of: (a) the Public Water System Facility Identification Number, which is an identification number established by the State, or at the State's discretion the PWS, that is unique to the PWS for an intake for each source of water, a treatment

Data Element	Definition
	<p>plant, a distribution system, or any other facility associated with water treatment or delivery and provides for the relationship of facilities to each other to be maintained;</p> <p>(b) the Sampling Point Identification Number, which is an identification number established by the State, or at the State's discretion the PWS, that is unique to each PWS facility that identifies the specific sampling point and allows the relationship of the sampling point to other facilities to be maintained; and</p> <p>(c) Sampling Point Type Identification, which is one of following:</p> <p>SR - Untreated water collected at the source of the water system facility.</p> <p>EP - Entry point to the distribution system.</p> <p>MD - midpoint in the distribution system where the chlorine residual would be expected to be typical for the system such as the location for sampling coliform indicator bacteria as described in 40 CFR 141.21.</p> <p>MR - point of maximum retention is the point located the furthest from the entry point to the distribution system which is approved by the State for trihalomethane (THM) (disinfectant byproducts (DBP)) and/or total coliform sampling.</p> <p>LD - location in the distribution system where the disinfectant residual is the lowest which is approved by the State for THM (DBP) and/or total coliform sampling.</p>
3. Sample Collection Date	The date the sample is collected reported as 4-digit year, 2-digit month, and 2-digit day.
4. Sample Identification Number	LAB*
5. Contaminant/Parameter	LAB*
6. Analytical Results - Sign	LAB*
7. Analytical Result - Value	LAB*
8. Analytical Result - Unit of Measure	LAB*
9. Analytical Method Number	LAB*
10. Sample Analysis Type	LAB*
11. Sample Batch Identification Number	LAB*
12. Minimum Reporting Level	LAB*
13. Minimum Reporting Level Unit of Measure	LAB*
14. Analytical Precision	LAB*

Data Element	Definition
15. Analytical Accuracy	LAB*
16. Spiking Concentration	LAB*
17. Presence/Absence	LAB* (Reserved)

* LAB indicates that this data element will be either specified or determined and recorded by the EPA-designated laboratory.

5.3 Will I Need to Notify the Public of Contaminant Occurrence Results?

Yes. Small CWSs are required to notify the public of UCMR monitoring results through annual Consumer Confidence Reports as specified by 40 CFR §141.153(d). NTNCWSs are required to notify persons served by the system of the availability of UCMR results, within 12 months after the results are known, as required by the revised public notification rule (65 FR 25982), under 40 CFR §141.207.

5.4 What Will the Data be Used for?

The purpose of the revised UCMR is to collect contaminant occurrence data to help EPA decide whether or not to regulate a contaminant. EPA's regulatory decisions are based on the concentration of a contaminant in PWSs across the United States and the potential adverse public health effects of a contaminant. The revised UCMR requires that PWSs monitor contaminants to determine the location and concentration of a list of unregulated contaminants in public drinking water across the United States, Tribal land, and Territories (§141.40(a)). The results provided by the UCMR Program will be used by the EPA to determine which unregulated contaminants pose the greatest risks to human health and, if necessary, to set priorities for the regulation of those contaminants. Contaminants that are not detected at significant levels in drinking water will not be considered in future regulation, unless other information becomes available.

5.5 Who Can I Contact With Further Questions?

For questions pertaining to this guidance, please contact your State drinking water agency or the appropriate EPA Region. However, if your system is in Florida, Iowa, Kansas, North Carolina, or Montana, please contact your EPA Region coordinator rather than your State agency.

EPA UCMR Implementation Team Leader:

Daniel Hautman, Technical Support Center, Standards and Risk Management Division, Office of Ground Water and Drinking Water (143), 26 West Martin Luther King Jr. Dr., Cincinnati, OH 45268. (513) 569-7274.

EPA UCMR Implementation Support Contractor:

Robin Silva-Wilkinson, Great Lakes Environmental Center (GLEC), 739 Hastings Street, Traverse City, MI 49686. (231) 941-2230.

Regional Contacts:

- I. Chris Ryan, 1 Congress Street, 11th Floor, Boston, MA 02118.
Phone: (617) 918-1567.
- II. Robert Poon, 290 Broadway, Room 2432, New York, NY 10007-1866.
Phone: (212) 637-3821.
- III. Michelle Hoover, 1650 Arch Street, Philadelphia PA 19103-2029.
Phone: (215) 814-5258.
- IV. Janine Morris, Sam Nunn Federal Center, 61 Forsyth St, SW, Atlanta GA 30303.
Phone: (404) 562-9480.
- V. Janet Kuefler, 77 West Jackson Blvd., Chicago, IL 60604-3507.
Phone: (312) 886-0123.
- VI. Andrew J. Waite, 1445 Ross Avenue, Suite 1200, Dallas, TX 75202.
Phone: (214) 665-7332.
- VII. Stan Calow, 901 N. Fifth Street, Kansas City, KS 66101.
Phone: (913) 551-7410.
- VIII. Rod Glebe, One Denver Place, 999 18th Street, Suite 500, Denver, CO 80202.
Phone: (303) 312-6627.
- IX. Jill Korte, 75 Hawthorne Street, San Francisco, CA 94105.
Phone: (415) 744-1853.
- X. Gene Taylor, 1200 Sixth Avenue, Seattle, WA 98101.
Phone: (206) 553-1389.

General information may also be obtained from the EPA Safe Drinking Water Hotline. Callers within the United States may reach the Hotline at (800) 426-4791. The Hotline is open Monday through Friday, excluding federal holidays, from 9:00 a.m. to 5:30 p.m. Eastern Standard Time.

Appendix A

Abbreviations and Acronyms

2,4-DNT	- 2,4-dinitrotoluene
2,6-DNT	- 2,6-dinitrotoluene
4,4'-DDE	- 4,4'-dichloro dichlorophenyl ethylene, a degradation product of DDT
Alachlor ESA	- alachlor ethanesulfonic acid, a degradation product of alachlor
AOAC	- Association of Official Analytical Chemists
APHA	- American Public Health Association
ASDWA	- Association of State Drinking Water Administrators
ASTM	- American Society for Testing and Materials
CAS	- Chemical Abstract Service
CASRN	- Chemical Abstract Service Registry Number
CCL	- Contaminant Candidate List
CCR	- Consumer Confidence Reports
CFR	- Code of Federal Regulations
CFU	- colony forming unit
CFU/mL	- colony forming units per milliliter
CWS	- community water system
DCPA	- dimethyl tetrachloroterephthalate, chemical name of the herbicide dacthal
DCPA mono- and di-acid degradates	- degradation products of DCPA
DDE	- dichloro dichlorophenyl ethylene, a degradation product of DDT
DDT	- dichloro diphenyl trichloroethane, a general insecticide
EPA	- Environmental Protection Agency
EPTC	- s-ethyl-dipropylthiocarbamate, an herbicide
EPTDS	- Entry Point to the Distribution System
ESA	- ethanesulfonic acid, a degradation product of alachlor
GLEC	- Great Lakes Environmental Center
GW	- ground water
GUDI	- ground water under the direct influence (of surface water)
MCL	- maximum contaminant level
MDL	- method detection limit

MRL	- minimum reporting level
MTBE	- methyl tertiary-butyl ether, a gasoline additive
NCOD	- National Drinking Water Contaminant Occurrence Database
NTNCWS	- non-transient non-community water system
OGWDW	- Office of Ground Water and Drinking Water
²¹⁰ Pb	- Lead-210 (also Pb-210), a lead isotope and radionuclide; part of the uranium decay series
pCi/L	- picocuries per liter
²¹⁰ Po	- Polonium-210 (also Po-210), a polonium isotope and radionuclide; part of the uranium decay series
PWS	- Public Water System
PWSF	- Public Water System Facility
QA	- quality assurance
QC	- quality control
RDX	- royal demolition explosive, hexahydro-1,3,5-trinitro-1,3,5-triazine
SDWA	- Safe Drinking Water Act
SDWIS	- Safe Drinking Water Information System
SDWIS FED	- the Federal Safe Drinking Water Information System
SM	- Standard Methods
SOC	- synthetic organic compound
SW	- surface water
TBD	- to be determined
TNCWS	- transient non-community water system
UCM	- Unregulated Contaminant Monitoring
UCMR	- Unregulated Contaminant Monitoring Regulation/Rule
USEPA	- United States Environmental Protection Agency
VOC	- volatile organic compound
Fg/L	- micrograms per liter

Appendix B

Definitions

Assessment Monitoring means sampling, testing, and reporting of listed contaminants that have available analytical methods and for which preliminary data indicate their possible occurrence in drinking water. Assessment Monitoring will be conducted for the UCMR (1999) List 1 contaminants.

Index Systems means a limited number of small CWSs and NTNCWSs, selected from the Assessment Monitoring systems in State Plans, that will be required to provide more detailed and frequent monitoring for the UCMR (1999) List 1 contaminants (§141.40(a)(6)). The Index Systems will be selected to geographically coincide with watersheds and areas studied under the United States Geological Survey's National Water Quality Assessment program. In addition to the reporting information required for Assessment Monitoring, the Index Systems must also report information on system operating conditions (such as water source, pumping rates, and environmental setting) (§141.40(a)(6)). These systems must monitor each year of the 5-year UCMR cycle, with EPA paying for all reasonable monitoring costs (§141.40(a)(4)(i)(A)). This more detailed and frequent monitoring will provide important information with which EPA can more fully evaluate the conditions under which small systems operate.

Listed contaminant means a contaminant identified as an analyte in Table 1, 141.40(a)(3) of the Unregulated Contaminant Monitoring Regulation (UCMR). To distinguish the current 1999 UCMR listed contaminants from potential future UCMR listed contaminants, all references to UCMR contaminant lists will identify the appropriate year in parenthesis immediately following the acronym UCMR and before the referenced list. For example, the contaminants included in the UCMR (1999) List include the component lists identified as UCMR (1999) List 1, UCMR (1999) List 2 and UCMR (1999) List 3 contaminants.

Listing cycle means the 5-year period for which each revised UCMR list is effective and during which no more than 30 unregulated contaminants from the list may be required to be monitored. EPA is mandated to develop and promulgate a new UCMR List every 5 years.

Monitored systems means all community water systems serving more than 10,000 people, and the national representative sample of community and non-transient non-community water systems serving 10,000 or fewer people that are selected to be part of a State Plan for the UCMR. (Note that for this round of Assessment Monitoring, systems that purchase their primary source of water are not included in the monitoring.)

Monitoring (as distinct from Assessment Monitoring) means all aspects of determining the quality of drinking water relative to the listed contaminants. These aspects include drinking water sampling and testing, and the reviewing, reporting, and submission to EPA of analytical results.

Most vulnerable systems (or Systems most vulnerable) means a subset of 5 to not more than 25 systems of all monitored systems in a State that are determined by that State in consultation with the EPA Regional Office to be most likely to have the listed contaminants occur in their drinking waters, considering the characteristics of the listed contaminants, precipitation, system operation, and environmental conditions (soils, geology and land use).

Pre-Screen Testing means sampling, testing, and reporting of the listed contaminants that may have newly emerged as drinking water concerns and, in most cases, for which methods are in an early stage of development. Pre-Screen Testing will be conducted by a limited number of systems (up to 200). States will nominate up to 25 of the most vulnerable systems per State for Pre-Screen Testing. The actual Pre-Screen Testing systems will be selected from the list of nominated systems through the use of a random number generator. Pre-Screen Testing will be performed to determine whether a listed contaminant occurs in sufficient frequency in the most vulnerable systems or sampling locations to warrant its being included in future Assessment Monitoring or Screening Surveys. Pre-Screen Testing will be conducted for the UCMR (1999) List 3 contaminants.

Random Sampling is a statistical sampling method by which each member of the population has an equal probability (an equal random chance) of being selected as part of a sample (the sample being a small subset of the population which represents the population as a whole).

Representative Sample (or National Representative Sample) means a small subset of all community and non-transient non-community water systems serving 10,000 or fewer people which EPA selects using a random number generator. The systems in the representative sample are selected using a stratified random sampling process that ensures that this small subset of systems will proportionally reflect (is “representative” of) the actual number of size- and water type-categories of all small systems nationally. In finalizing State Plans, a State may substitute a system from the replacement list for a system selected as part of the original representative sample, if a system on the representative sample list in the State Plan is closed, merged or purchases water from another system.

Sampling means the act of collecting water from the appropriate location in a public water system (from the applicable point from an intake or well to the end of a distribution line, or in some limited cases, a residential tap) following proper methods for the particular contaminant or group of contaminants.

Sampling Point means a unique location where samples are to be collected.

Screening Survey means sampling, testing, and reporting of the List 2 contaminants. These contaminants have analytical methods which have been recently developed, and have uncertain potential for occurrence in drinking water. Under the final List 2 Rule (66 FR 2273), two Screening Surveys will be conducted by a subset of approximately 180 small systems from the 800 small systems conducting Assessment Monitoring. Screening Survey one will be conducted by small systems during 2001 for the List 2 chemical contaminants. Screening Survey two will be conducted by small systems during 2003 for the List 2 microbiological contaminant, *Aeromonas*.

State means each of the fifty States, the District of Columbia, U.S. Territories, and Tribal lands. For the national representative sample, Guam, the Commonwealth of Puerto Rico, the Northern Mariana Islands, the Virgin Islands, American Samoa, and the Trust Territories of the Pacific Islands are each treated as an individual State. All Tribal water systems in the U.S. which have status as a State under Section 1451 of the Safe Drinking Water Act for this program will be considered collectively as one State for the purposes of selecting a representative sample of small systems.

State Monitoring Plan (or State Plan) means a State's portion of the national representative sample of CWSs and NTNCWSs serving 10,000 or fewer people which must monitor for unregulated contaminants (Assessment Monitoring, Screening Survey(s) and Index Systems) and all large systems (systems serving greater than 10,000 people) which are required to monitor for Screening Survey contaminants. A State Plan may be developed by a State's acceptance of EPA's representative sample for that State, or by a State's selection of systems from a replacement list for systems specified in the first list that are closed, are merged, or purchase water from another system. A State Plan also includes the process by which the State will inform each public water system of its selection for the plan and of its responsibilities to monitor. A State Plan will also include the systems required to conduct Pre-Screen Testing, selected from the State's designation of vulnerable systems. The State Plan may be part of the Partnership Agreement (PA) between the State and EPA.

Stratified Random Sampling is a procedure to draw a random sample from a population that has been divided into subpopulations or strata, with each stratum comprised of a population subset sharing common characteristics. Random samples are selected from each stratum proportional to that stratum's proportion of the entire population. The aggregate random sample (compiled from all the strata samples) provides a random sample of the entire population that reflects the proportional distribution of characteristics of the population. In the context of the UCMR, the population served by public water systems was stratified by size (with size categories of 500 or fewer people served, 501 to 3,300 people served, and 3,301 to 10,000 people served) and by water source type supplying the water system (ground water or surface water). This stratification was done to ensure that systems randomly selected as nationally representative sample systems would proportionally reflect the actual number of size and water type categories nationally.

Testing means, for the purposes of the UCMR and distinct from *Pre-Screen Testing*, the submission and/or shipment of samples following appropriate preservation practices to protect the integrity of the sample; the chemical, radiological, physical and/or microbiological analysis of samples; and the reporting of the sample's analytical results for evaluation. Testing is a subset of activities defined as *monitoring*.

Unregulated contaminants means chemical, microbiological, radiological and other substances that occur in drinking water or sources of drinking water that are not currently regulated under the federal drinking water program. EPA has not issued standards for these substances in drinking water (i.e., maximum contaminant levels or treatment technology requirements). EPA is required by Congress to establish a program to monitor for selected unregulated contaminants in public water systems to determine whether they should be considered for future regulation to protect public health. The

selected contaminants are listed in 141.40(a)(3), Table 1, the UCMR List.

Vulnerable time (or *vulnerable period*) means the time (or, in some cases, the 3-month quarter) of the year determined as the most likely to have the listed group of contaminants present at their highest concentrations or densities in drinking water. The vulnerable determination, in the case of the UCMR, is made by the EPA or by the State (under arrangement with the EPA) for a system, subset of systems, or all systems in a State. The vulnerable determination is based on characteristics of the contaminants, precipitation, system operations, and environmental conditions such as soil types, geology, and land use. This determination does not indicate or imply that the listed contaminants will be identified in the drinking water with certainty, but only that sampling conducted during the vulnerable period presumably has the highest likelihood of identifying those contaminants in higher concentrations relative to other sampling times of the year, if and when the contaminants occur.