pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER

Lead and Copper Rule

Section 1 and 2 of the "Working Guide to the Lead and Copper Rule"

PREFACE

GUIDE DESCRIPTION

The following is a brief synopsis of the sections found in this guide:

Section 1 - Summary

Offers an overview of the regulatory requirements and the rationale for control of lead and copper in drinking water.

Section 2 – Planning and Initial Monitoring

Details the LCR planning requirements, including the materials evaluation and sample site location plan, and the initial monitoring requirements for lead and copper and WQPs.

TABLE OF CONTENTS

SUMMARY

Overview of the Lead and Copper Rule

On June 7, 1991, the U.S. Environmental Protection Agency (EPA) issued its final Lead and Copper Rule (LCR). On January 12, 2000, EPA made several revisions to the LCR to improve implementation. Promulgation of the state's Lead and Copper Rule was necessary to comply with the provisions of the Pennsylvania Safe Drinking Water Act. State regulations at least as stringent as the federal rule were necessary for Pennsylvania to maintain primary enforcement responsibility (primacy) under the federal Safe Drinking Water Act.

The state's Lead and Copper Rule became effective December 24, 1994. The minor revisions to this rule became effective August 10, 2002. This rule applies to all community and nontransient noncommunity water systems and classifies systems based on the population they serve.

SYSTEM	POPULATION
Large	>50,000
Medium	3,301 to 50,000
Small	<3,301

The primary objective of this rule is to control lead and copper levels in public drinking water systems through a treatment technique for corrosion control.

The rule establishes a lead action level of **0.015 mg/L** and a copper action level of **1.3 mg/L** . An action level is not an MCL. It represents a level at which the system must take additional action under its control to reduce lead or copper levels and inform consumers about the actions they can take to lower exposure to lead in drinking water.

CONTAMINANT	ACTION LEVEL (mg/L)*
Lead	0.015
Copper	1.3
**Measured in 90th percentile at taps*	

The rule establishes a treatment technique that includes requirements for:

- ***Corrosion control treatment (CCT),***
- ***Lead service line (LSL) replacement, and***
- ***Public education (PE).***

Treatment technique requirements are triggered by exceedances of an action level as measured in the 90th percentile at the consumers' taps. An action level is exceeded when the concentration of the contaminant in more than 10 percent of tap water samples is greater than the action level.

The comprehensive monitoring requirements of this rule will identify the contributions of different sources of lead and copper corrosion by-products to drinking water and will enable a water system to determine the lead and copper concentrations to which its customers may be exposed.

Systems exceeding either the lead or copper action level are required to install optimal corrosion control treatment (OCCT), source water treatment or both. OCCT is defined as follows:

> OCCT minimizes the lead and copper concentrations at users' taps while ensuring that the treatment does not cause the system to violate any primary maximum contaminant level.
>
> A system may achieve OCCT in one of the following ways:
>
> 1. Small and medium systems can achieve OCCT by not exceeding either action level for lead and copper tap monitoring during two consecutive six-month monitoring periods.
>
> 2. Any system can achieve OCCT if, during two consecutive six-month monitoring periods, its lead and copper tap monitoring results do not exceed the action levels at the 90th percentile and the difference between the 90th percentile lead level and the highest source water lead concentration is less than 0.005 mg/L.
>
> 3. Any system can achieve OCCT when the system installs new CCT facilities or modifies existing treatment and operates in compliance with the WQP performance standards specified for that system by the department.

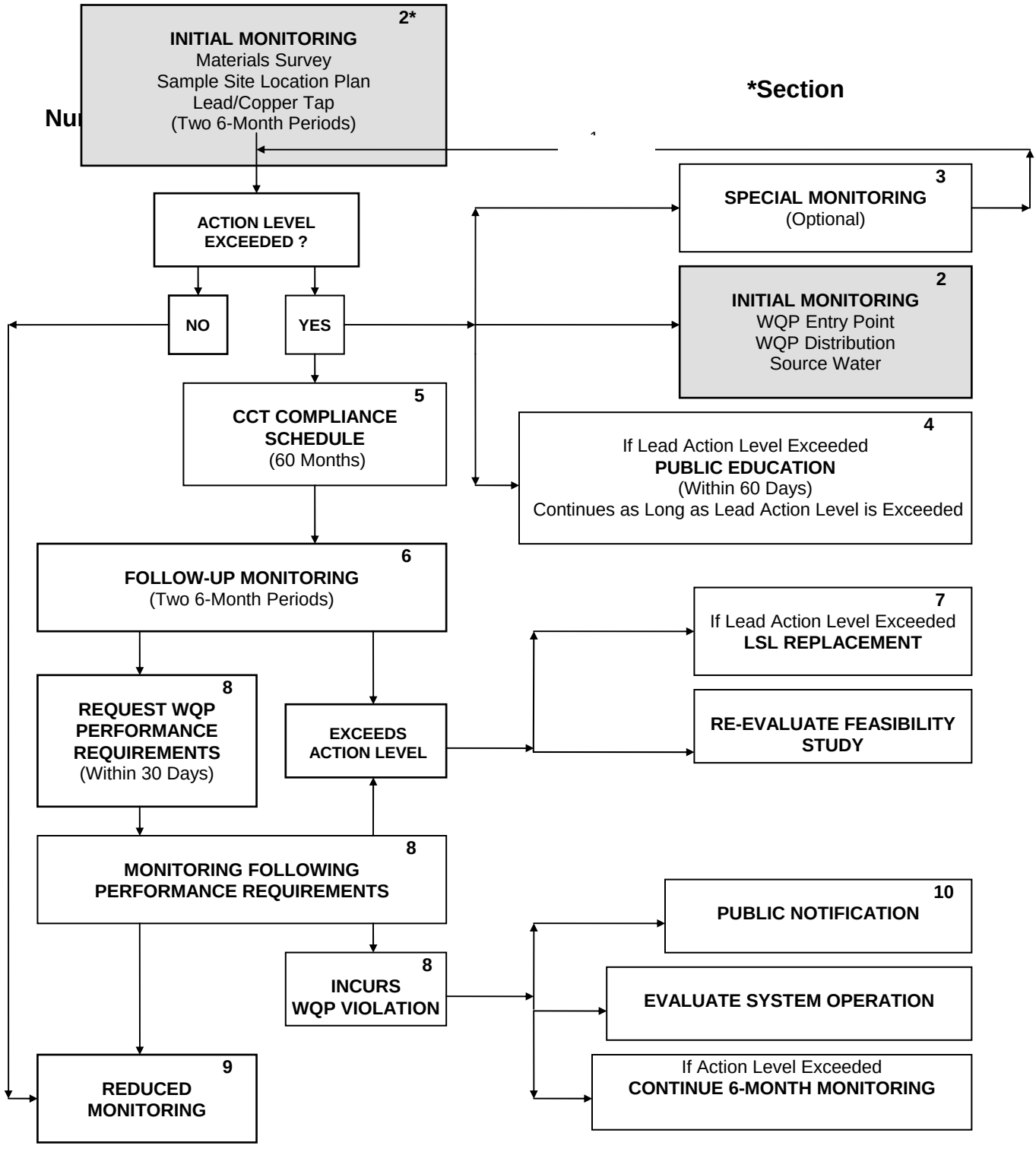
After treatment, if lead levels are still too high, systems are required to replace LSLs. Systems that exceed the lead action level are required to implement a PE program about the effects of lead in drinking water.

HEALTH EFFECTS AND SOURCES OF LEAD AND COPPER

The severity of lead contamination depends on the amount of lead in the distribution system and home plumbing and on the corrosiveness of the water. The highest lead levels occur in the first-draw tap water after several hours of water stagnation in pipes and plumbing materials. Nearly all public water systems in Pennsylvania contain some type of leaded plumbing materials either in the distribution system or in homes or other buildings. An EPA study conducted in the mid 1980s indicated that 85 percent of Pennsylvania's community water systems have corrosive water, with the water in 35 percent of the systems being highly corrosive. The EPA estimates that lead in drinking water contributes between 10 to 20 percent of total lead exposure in young children.

Contaminant	Health Effects	Lead and Copper Contamination Sources
Lead	*Children:* Altered physical and mental development; interference with growth; deficits in IQ, attention span, and hearing; interference with heme synthesis. *Women:* Increased blood pressure; shorter gestational period; kidney damage. *Men:* Increased blood pressure; kidney damage.	*Corrosion of:* 1. Lead solder and brass fixtures. 2. Lead service lines (20% of public water systems.) *Source Water:* (1% of public water systems.)
Copper	Stomach and intestinal distress in persons with Wilson's disease.	*Corrosion of:* Interior household and building pipes.

SECTION 2



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

PLANNING and INITIAL MONITORING

MATERIALS SURVEY

All community and nontransient noncommunity water systems should survey all records documenting the materials used to construct and repair their distribution system piping. Additionally, systems should review the interior plumbing materials used within residences and buildings connected to their distribution system. Sources of information include:

- Plumbing codes;
- Plumbing permits;
- Distribution maps and drawings;
- Inspection and maintenance records;
- Meter installation records;
- Standard operating procedures;
- Operation and maintenance manuals;
- Permit files;
- Existing water quality data;
- Interviews with senior personnel, building inspectors, and retirees; and
- Community survey.

Several worksheets for organizing the information collected during the materials evaluation are included at the end of this section These worksheets should be useful when determining the sites that contain the highest priority materials.

Lead and Copper Tap Sample Pool Criteria

The Lead and Copper Rule requires all community and nontransient noncommunity water systems to collect tap water samples to determine lead and copper levels to which customers may be exposed. Tap water samples must be collected from sampling locations that meet the following criteria.

COMMUNITY WATER SYSTEMS

For community water systems, lead and copper tap water samples must be collected from sampling locations that meet one of the following criteria:

Tier 1. Single family structures that:
- contain lead pipes; or
- are served by lead service lines; or
- contain copper pipes with lead solder that were **installed after 1982, but before** January 6, 1991 (effective date of the Pennsylvania Plumbing System Ban and Notification Act)**.**

Tier 2. Buildings and multiple-family residences that:
- contain lead pipes; or
- are served by lead service lines; or
- contain copper pipes with lead solder that were **installed after 1982, but before** January 6, 1991 (effective date of the Pennsylvania Plumbing System Ban and Notification Act)**..**

Tier 3. Structures that were constructed as a single family residence and currently used as either a residence or business, that:
- contain copper pipes with lead solder **installed before 1983**.

- Community water systems should identify more sampling sites than the required number during each monitoring period in case volunteers drop out of the sampling pool.

- **Water systems are not required to target structures with lead solder installed after January 6, 1991**; which is the effective date of the Pennsylvania Plumbing System Lead Ban and Notification Act.

- **If a water system contains lead service lines, 50 percent of the sampling sites included in the sampling pool should be served by a lead service line**.

- When a sufficient number of lead service line sites do not exist or are inaccessible, a water system must collect a tap water sample from each site served by a lead service line.

- If a water system has no lead service lines, but it does have lead goosenecks or pigtails, the system should collect tap water samples at the sites with the goosenecks and/or pigtails.

- **Sampling pools should consist of Tier 1 sites**.

- When a sufficient number of Tier 1 sites do not exist or are inaccessible, the water system must complete its sampling pool with Tier 2 sites.

- When a sufficient number of Tier 1 and 2 sites do not exist or are inaccessible, the water system must complete its sampling pool with Tier 3 sites.

- When a sufficient number of Tier 1, 2 and 3 sites do not exist or are inaccessible, the water system shall sample from other representative sites throughout the distribution system in which the plumbing materials used at the site would be commonly found at other sites served by the system.

- If a community water system operates 24 hours a day (such as a prison or nursing home) and does not have enough taps that supply first-draw lead and copper samples, the water supplier may apply to DEP, in writing, to substitute non-first draw samples with samples from drinking water taps that would likely result in the longest standing time. In the request, the supplier needs to identify sampling times and locations of those non-first draw sites.

  NOTE: Suppliers shall collect as many first-draw samples from appropriate taps as possible before supplementing with non-first draw sites.

- Community water systems that contain a fewer number of buildings than the required number of sampling sites, may sample from different taps within a representative number of buildings.

  NOTE: Samples shall be taken on different days from taps most commonly used to provide drinking water.

- If a water supplier collects additional lead and copper tap samples, these sites must be the highest tier sites possible. The supplier cannot dilute the 90th percentile value with lower tier sample sites.

- If multiple-family residences comprise at least 20 percent of the structures served by a water system, the system may consider a representative number of these structures as Tier 1 sites in its sampling pool.

- If a water system contains only plastic plumbing, but the faucets and fittings contain lead, the system should collect tap samples at single family structures with such faucets and fittings.

- Samples may not be taken from taps that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.

NONTRANSIENT NONCOMMUNITY WATER SYSTEMS

For nontransient noncommunity water systems, lead and copper tap water samples must be collected from sampling locations that meet the following criteria:	
Tier 1.	Buildings that: • are served by lead service lines; or • contain lead pipes; or • contain copper pipes with lead solder that were **installed after 1982, but before** January 6, 1991 (effective date of the Pennsylvania Plumbing System Ban and Notification Act)**..**
Non-Tier.	Sites that: • contain copper pipes with lead solder **installed before 1983.**
N/A.	Sites that: • contain plumbing materials that are commonly found at other locations within the system.

If a water system contains lead service lines, 50 percent of the sampling sites included in the sampling pool should be served by a lead service line.

A system that has an insufficient number of Tier 1 sampling sites shall complete its sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983.

If additional sites are needed, the system shall use representative sites throughout the distribution system in which the plumbing materials used at the site would be commonly found at other sites served by the system.

- **Nontransient noncommunity water systems are not required to target buildings with lead solder installed after January 6, 1991**; effective date of the Pennsylvania Plumbing System Lead Ban and Notification Act.

- **Sampling pools should consist of Tier 1 sites**.

- If the water system contains fewer buildings than the required number of sampling sites, samples may be collected from different taps within a representative number of buildings. The taps should be those most

commonly used for drinking and the samples should be taken on different days. If the system has an insufficient number of these taps to take each sample from a different tap, the system may sample from the same tap on different days.

- If a nontransient noncommunity water system operates 24 hours a day (such as a hospital or factory) and does not have enough taps that supply first-draw lead and copper samples, the water supplier may apply to DEP, in writing, to substitute non-first draw samples with samples from drinking water taps that would likely result in the longest standing time. In the request, the supplier needs to identify sampling times and locations of those non-first draw sites.

  NOTE: Suppliers shall collect as many first-draw samples from appropriate taps as possible before supplementing with non-first draw sites.

- If the water system contains only plastic plumbing, but the faucets and fittings contain lead, the system should collect tap samples at taps with such faucets and fittings.

- Samples may not be taken from taps that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants. When water softeners are installed as central treatment, lead and copper tap samples should be taken after treatment.

SAMPLE SITE LOCATION PLAN

All community and nontransient noncommunity water systems must complete a sample site location plan (SSLP) prior to initiation of lead and copper sample collection. The plan shall include:

- Materials evaluation of distribution system,
- Lead and copper tap sample site locations,
- Water quality parameter sample site locations, and
- Certification that proper sampling procedures are used.

The water system shall keep the sample site location plan on file. Systems shall submit a copy to the local DEP district office. If the system is required to prepare a corrosion control treatment feasibility study, the system shall include the plan as part of the study.

A set of worksheets for completing a SSLP that meets all the requirements of the LCR is provided at the end of this section of the LCR Working Guide.

INITIAL LEAD AND COPPER TAP MONITORING

Initial lead and copper tap monitoring for community and nontransient noncommunity water systems consists of two consecutive six-month periods. Monitoring periods begin in January and July and end in June and December.

The first six-month monitoring period for any new water system created after December 24, 1994 shall begin with the next six-month monitoring period following the issuance of an operations permit or following the system's provision of water to a sufficient number of sampling sites for the water supplier to comply with sample site requirements, whichever period is later.

Large water systems shall monitor during two consecutive six-month periods and shall comply with the corrosion control treatment (CCT) compliance schedule (Section 5).

Small or medium water systems shall monitor during each six-month monitoring period until one of the following occurs:

1. The system exceeds either the lead or copper action level and is therefore required to comply with the CCT compliance schedule (Section 5) and may choose to begin special monitoring.

2. The system meets both the lead and copper action levels during two consecutive six-month monitoring periods, in which case the system qualifies for reduced monitoring (Section 9).

All public water systems are required to collect one sample for lead and copper analysis from the following number of sites during each six-month monitoring period:

SYSTEM SIZE (POPULATION)	NUMBER OF LEAD AND COPPER TAP SAMPLING SITES
>100,000	100
10,001 to 100,000	60
3,301 to 10,000	40
501 to 3,300	20
101 to 500	10
≤100	5

INITIAL LEAD AND COPPER SOURCE WATER MONITORING

A system which exceeds either the lead or copper action levels shall collect one source water sample from each entry point within six months after the exceedance. Monitoring is required only for the parameter for which the action level was exceeded.

INITIAL WATER QUALITY PARAMETER MONITORING

In addition to lead and copper, all large water systems and those small and medium-size systems that exceed the lead or copper action level, will be required to monitor for the following water quality parameters (WQPs):

- **pH;**
- **Alkalinity;**
- **Calcium;**
- **Conductivity;**
- **Water temperature; and**
- **Orthophosphate, when an inhibitor containing a phosphate compound is used; or**
- **Silica, when an inhibitor containing a silicate compound is used.**

These parameters are used to identify optimal treatment and, once treatment is installed, to determine whether a system remains in compliance with the rule. Systems shall monitor WQPs at two separate locations:

- **Representative taps throughout the distribution system, and**
- **Entry points to the distribution system.**

A system shall collect **two sets** of WQP distribution samples from the following number of sample sites. The sample sites shall be representative of water quality throughout the distribution system taking into account the different sources of water, the different treatment methods, and seasonal variability. The sets of samples shall be collected from the same sample sites on different days and analyzed for the applicable WQPs.

SYSTEM SIZE (POPULATION)	NUMBER OF WQP DISTRIBUTION SAMPLING SITES
>100,000	25
10,001 to 100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

A system shall also collect two sets of WQP samples at each entry point. The sets of samples shall be collected on different days and analyzed for the applicable WQPs.

WATER SAMPLE COLLECTION PROTOCOL

LEAD AND COPPER TAP SAMPLES

- 1 liter sample size;
- **First-draw after six hour standing time. Lead and copper analyses from sample sites that have had long standing times (i.e. 24 hours or more) may have unusually high results. Water suppliers can encourage homeowners to flush the sample site prior to the six hour standing time requirement;**
- Cold water kitchen or bathroom tap OR interior tap used for consumption;
- Collected by the water supplier or residents (residents must be instructed of proper sampling procedures);
- If residents perform sampling, the supplier may not challenge the accuracy of sampling results, based on alleged errors in sample collection;
- Samples can be acidified up to 14 days after the sample is collected. After acidification, the sample shall stand in the original container for the time specified according to the approved EPA method before analyzing the sample;
- For subsequent monitoring, the system shall make reasonable effort to collect each first-draw tap sample from the same sampling site from which it collected a previous sample. If the supplier is unable to use an original sampling site, the supplier may collect the tap sample from another sampling site in its sampling pool as long as new site meets same targeting criteria, and is within reasonable proximity to original site; and
- **Collect early in monitoring period in order to allow time for collection of water quality parameter samples during same period if necessary.**

The department will only consider lead and copper sample results analyzed by a certified laboratory.

WATER QUALITY PARAMETER SAMPLES

- Remove faucet aerator and fully flush the line;
- If collecting water quality parameter samples from the same location as coliform and disinfectant residual samples, collect coliform samples first; then measure disinfectant residual, temperature and pH; and finally collect samples for other water quality parameters;
- Collect each WQP sample using two 500 mL plastic or glass containers (plastic container must be used for silica);
- Measure temperature in the field;
- Measure pH in the field within 15 minutes of sample collection with a calibrated meter capable of measuring to 1/10 of a unit;
- Avoid agitating the water sample;
- Record observations about color, suspended solids, and flushing time required prior to sample collection;
- Store samples in a cool environment until analyzed;
- The two sets of water quality parameter samples should be collected at different times in the monitoring period to ensure data is representative of seasonal changes.

Measurements for water quality parameters may be performed by a certified laboratory or by a person meeting the operator certification requirements. Proper analytical methods shall be used.

ANALYTICAL METHODS AND LABORATORY CERTIFICATION

EPA-approved analytical methods are designated in the rule and are as follows:

CONTAMINANT	METHODOLOGY	EPA	ASTM[1]	SM[2]	OTHER
Lead	Atomic absorption; furnace		D3559-95D	3113B	
	ICP-Mass Spectrometry	200.8[3]			
	Atomic absorption; platform	200.9[3]			
	Differential pulse anodic stripping voltammetry				1001[6]
Copper	Atomic absorption; furnace		D1688-95C	3113B	
	Atomic absorption; direct aspiration		D1688-95A	3111B	
	ICP	200.7[3]		3120B	
	ICP-Mass spectrometry	200.8[3]			
	Atomic absorption; platform	200.9[3]			
pH	Electrometric	150.1[5] 150.2[5]	D1293-95	4500-H^+-B	
Conductivity	Conductance		D1125-91A	2510B	
Calcium	EDTA titrimetric		D511-93A	3500-Ca-D	
	Atomic absorption; direct aspiration		D511-93B	3111B	
	Inductively coupled plasma	200.7[3]		3120B	
Alkalinity	Titrimetric		D1067-92B	2320B	
	Electrometric titration				I-1030-85[7]
Ortho-phosphate, unfiltered, no digestion or hydrolysis	Colorimetric, automated, ascorbic acid	365.1[4]		4500-P-F	
	Colorimetric, ascorbic acid, single reagent		D515-88A	4500-P-E	
	Colorimetric, phosphomolybdate				I-1602-85[7]
	Colorimetric, automated-segment flow				I-2601-90[7]
	Colorimetric, automated discrete				I-2598-85[7]
	Ion chromatography	300.0[4]	D4327-91	4110 B	
Silica	Colorimetric		D859-88		
	Colorimetric: molybdate blue				I-1700-85
	Colorimetric: automated-seg. flow				I-2700-85
	Molybdosilicate			4500-Si-D	
	Heteropoly blue			4500-Si-E	
	Automated method for molybdate-reactive silica			4500-Si-F	
	Inductively coupled plasma	200.7[3]		3120B	
Temperature	Thermometric			2550B	

Notes:

[1]Annual Book of ASTM Standards, Vols. 11.01 and 11.02, American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

[2]18th edition of Standard Methods for the Examination of Water and Wastewater, 1992, American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

[3]"Methods for the Determination of Metals in Environmental Samples - Supplement I," EPA-600/R-94/111, May 1994.

[4]"Methods for the Determination of Inorganic Substances in Environmental Samples," EPA-600/R-93/100, August 1993.

[5]Methods 150.1 and 150.2 are available from USEPA, EMSL-Cincinnati, OH 45268. The identical methods are also in "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79/020, March 1983.

[6]The description for Method Number 1001 for lead is available from Palintest, LTD, 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY 41018 or from the Hach Company, P.O. Box 389 , Loveland, CO 80538

[7]Method I-2601-90, Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments, Open File Report 93-125, 1993: For Methods I-1030-85; I-1601-85; I-1700-85; I-2598-85; I-2700-85; and I-3300-85 See Techniques of Water Resources Investigation of the U.S. Geological Survey, Book 5, Chapter A-1, 3rd ed., 1989; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

The practical quantitation limit (PQL) is set at 0.005 mg/L for lead and 0.050 mg/L for copper. Laboratory certification criteria are $\pm$ 10 % at >0.050 mg/L for copper and $\pm$ 30 % at >0.005 mg/L for lead.

Laboratories are not required to be certified to test for pH, water temperature, calcium, orthophosphate, silica, alkalinity, or conductivity.

ATTACHMENTS

- Materials Survey Worksheet
- Tier Assignment Key
- Complete Sample Site Location Plan (SSLP) Template
- Directions for Completing a SSLP

WORKSHEET #1

MATERIALS SURVEY INVESTIGATION RESULTS

PWS ID NUMBER

POPULATION SERVED BY PWS

Type of Structure	Location	Name	Phone	LSL	Interior Plumbing Material	Accessible	Tier	3 Digit Location ID#

Key:

Type of Structure
- **BLDG –** Building
- **MFR –** Muti-family residence
- **SFR –** Single family residence

Distribution System
- **LSL –** Lead Service Lines

Interior Plumbing Material
- **LP** – Lead Pipe
- **CLSa82** – Copper Pipe with Lead Solder after 1982
- **CLSb83 –** Copper Pipe with Lead Solder before 1983
- **P** - Plastic

PLUMBING MATERIALS TYPE
Tier Assignment Key

Tier Assignment for CWS

Type of Structure	Type of Plumbing Material				
	Distribution System Piping	Interior Plumbing			
	LSLs	Lead Pipe	Copper with Lead Solder installed after 1982 **	Copper with Lead Solder installed before 1983	Non-lead Piping
SFR	Tier 1	Tier 1	Tier 1	Tier 3	N/A
MFR	Tier 2	Tier 2	Tier 2	Non-Tier	N/A
BLDG	Tier 2	Tier 2	Tier 2	N/A *	N/A

** **Not applicable (N/A) unless an SFR was converted to a BLDG, then Tier 3**

** **Excludes structures with solder installed after 1-6-91** (must use lead-free solder per PA Plumbing System Lead Ban and Notification Act); these sites would be **N/A**.

Tier Assignment for NTNCWS

Type of Structure	Type of Plumbing Material				
	Distribution System Piping	Interior Plumbing			
	LSLs	Lead Pipe	Copper with Lead Solder installed after 1982 **	Copper with Lead Solder installed before 1983	Non-lead Piping
BLDG	Tier 1	Tier 1	Tier 1	Non-Tier	N/A

** **Excludes structures with solder installed after 1-6-91** (must use lead-free solder per PA Plumbing System Lead Ban and Notification Act); these sites would be **N/A**.

Key:	Type of Structure	Distribution System
	BLDG – Building	**LSL –** Lead Service Lines
	MFR – Muti-family residence	
	SFR – Single family residence	

LCR Sample Site Location Plan

GENERAL SYSTEM INFORMATION

Water System Name: PWSID:

Mailing Address:

Contact Person: Phone: E-mail:

System Type: Population Served:

LEAD AND COPPER SAMPLING SITE LISTING

3 Digit Location ID#	Sample Site Address / Room #	Tier 1, 2 or 3 Site and/or served by an LSL?

LEAD AND COPPER SAMPLING SITE LISTING (con't)

3 Digit Location ID#	Sample Site Address / Room #	Tier 1, 2 or 3 Site and/or served by an LSL?
Alternates:		

WATER QUALITY PARAMETER SAMPLING SITE LISTING. These parameters are used to identify optimal treatment and, once lead and copper corrosion control treatment is installed, to determine whether a system remains in compliance with the rule. Sampling is conducted at the entry point to the distribution and at representative sites throughout the distribution.

(Refer to the WQP Initial Monitoring Table in the LCR Working Guide to determine the number of sites.)

3 Digit Location ID#	**Sample Site Address / Room #**
Entry Point (E-Samples):	
Distribution System (D-Samples):	

SUGGESTED DIRECTIONS
TAP SAMPLE COLLECTION PROCEDURES

These samples are being collected to determine the lead and copper levels in your tap water. This sampling effort is required by the U.S. Environmental Protection Agency and the Pennsylvania Department of Environmental Protection, and is being accomplished through the cooperation of homeowners and residents.

A sample is to be collected after water has been sitting in the pipes for an extended period of time (i.e., no water use during this period). The collection procedure is described in more detail below:

1. Prior arrangements will be made with the customer to coordinate the sample collection event. Dates will be set for sample kit delivery and pick-up by water department staff.

2. **A minimum six (6) hour period during which there is no water use throughout the house** must be achieved prior to sampling. The water department recommends that either early mornings or evenings upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist.

3. A **kitchen or bathroom cold-water faucet** is to be used for sampling. **Do not remove the aerator prior to sampling**. Place the sample bottle (open) below the faucet and gently open the cold water tap. Fill the sample bottle to the line marked "**1,000- m/L**" and turn off the water.

4. Tightly cap the sample bottle and place it in the sample kit provided. Please review the sample kit label at this time to ensure that all information contained on the label is correct.

5. If any plumbing repairs or replacements have been done in the home since the previous sampling event, note this information on the label as provided. Also if your sample was collected from a tap with a water softener, note this as well.

6. Place the sample kit outside of the residence in the location of the kit's delivery so that department staff may pick up the sample kit.

7. Results from this monitoring effort will be provided to participating customers when reports are generated for the State unless excessive lead and/or copper levels are found. In those cases, immediate notification will be provided (usually within ten (10) working days from the time of sample collection).

Call _____ at _____ if you have any questions regarding these instructions.

I certify that each sample collector has been instructed in the proper methods for collecting lead and copper tap samples.

Water Supplier Signature: _____ Date: _____

LCR Sample Site Location Plan

INSTRUCTIONS:

The LCR sample site location plan includes four elements:

A. Materials evaluation of the distribution. Systems should survey all records documenting the materials used in construction and repair of their distribution system, and buildings connected to their distribution system, in order to identify a sufficient number of lead and copper tap sampling sites. Record materials evaluation data on worksheet #1. Use the Tier Assignment Key found on page 3 to determine the tier status of each structure.

For <u>Community Water Systems</u>, lead and copper tap water samples must be collected from sampling locations that meet one of the following criteria:

Tier 1. Single family structures that contain lead pipes, or copper pipes with lead solder **installed after 1982,** and/or are served by lead service lines.

Tier 2. Buildings and multiple-family residences that contain lead pipes, or copper pipes with lead solder **installed after 1982,** and/or are served by lead service lines.

Tier 3. Single family structures, constructed as a single family residence and currently used as either a residence or business, that contain copper pipes with lead solder **installed before 1983.**

Sampling pools should consist of Tier 1 sites. If the water system contains fewer buildings than the required number of sampling sites, samples may be collected from different taps within a representative number of buildings. The taps should be those most commonly used for drinking and the samples should be taken on different days. If the system has an insufficient number of these taps to take each sample from a different tap, the system may sample from the same tap on different days.

For <u>Nontransient Noncommunity Water Systems</u>, lead and copper tap water samples must be collected from sampling locations that meet the following criteria:

Tier 1. Buildings that contain copper pipes with lead solder **installed after 1982,** lead pipes, and/or are served by lead service lines.

A system that has an insufficient number of Tier 1 sampling sites shall complete its sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed, the system shall use representative sites consisting of plumbing materials that would be commonly found at other sites served by the system.

Sampling pools should consist of Tier 1 sites. If the water system contains fewer buildings than the required number of sampling sites, samples may be collected from different taps within a representative number of buildings. The taps should be those most commonly used for drinking and the samples should be taken on different days. If the system has an insufficient number of these taps to take each sample from a different tap, the system may sample from the same tap on different days.

B. Lead & Copper Tap sample site location listing. List sites on pages 1 & 2 of the SSLP. Include 3 digit location id # you have assigned the location (001,002,003 …), the Address/ Room #, and for Community Water Supplies, indicate whether it is a Tier 1,2 or 3 site.

C. Water Quality Parameter sample site location listing.
All large water supplies and those small & medium sized systems that have exceeded the lead and copper action level will be required to monitor for pH, alkalinity, orthophosphate (when an inhibitor containing phosphate is used), silica (when an inhibitor containing a silicate is used), calcium, conductivity, and water temperature. These parameters are used to identify optimal treatment and, once lead and copper corrosion control treatment is installed, to determine whether a system remains in compliance with the rule. Sampling is conducted at the entry point to the distribution, and at representative sites throughout the distribution. List sites on page 3 of the SSLP when applicable.

D. Certification that proper sampling procedures are used. A copy of a certification form, outlining proper sampling procedures is included in the plan (page 4 of SSLP) to demonstrate that your system is satisfying this particular requirement.