DEQ	OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE POLICY AND PROCEDURE		DEPARTMENT OF ENVIRONMENTAL QUALITY
Original Effective Date: August 4, 2003 **Revised Date:** **Reformatted Date:** January 17, 2013	**Subject:** Lead and Copper Rule Implementation **Division/Office and Program Names:** ODWMA-Public Water System Supervision Program		**Category:** ☐ Internal/Administrative ☐ External/Noninterpretive ☒ External/Interpretive
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A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.

INTRODUCTION, PURPOSE, OR ISSUE:

The Lead and Copper Rule (LCR) of the National Primary Drinking Water Regulations was promulgated by the United States Environmental Protection Agency (U.S. EPA) under the federal Safe Drinking Water Act. The complexity of the rule necessitates guidance to maintain consistent implementation of the rule by field staff. Field staff include the Department of Environmental Quality (DEQ) public water supply (PWS) staff and local health department (LHD) staff. The LHDs oversee the Nontransient Noncommunity Water Supplies (NTNCWS) under authority delegated by the DEQ.

This policy replaces Water Division Policy and Procedure WD-03-019, Lead and Copper Rule Implementation, dated August 4, 2003.

AUTHORITY:

The following are the administrative rules promulgated under the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), related to the LCR (R 325.10101 *et seq.*):

- Rule 410 – Public Education and Consumer Notice of Lead Result
- Rule 604f – Corrosion Control Treatment, Source Water Treatment, and Lead Service Line Replacement
- Rules 710a, 710b and 710c – Monitoring
- Rule 710d – Reporting
- Rule 734 – Reporting of Results of Analyses
- Rule 1506 – Retention of Records

LIST OF ACRONYMS:

Act 399	Safe Drinking Water Act, 1976 PA 399, as amended
AL	Action Level
CCT	Corrosion control treatment
CDS	Combined distribution system
CDW	Community Drinking Water
CS	Consecutive Systems
CWS	Community Water Supply
LCR	Lead and Copper Rule
LHD	Local Health Department
MCS	Modified Consecutive System
mg/L	milligrams per liter
NPDWS	Noncommunity and Private Drinking Water Supplies
NTNCWS	Nontransient Noncommunity Water Supplies
OWQP	Optimal water quality parameters
PE	Public Education
POU or POE	Point of use or point of entry device
PWS	Public water supply
Rule 410	R 325.10410 and similarly throughout
WQP	Water quality parameters

DEFINITIONS:

"Improper sample" – a sample that does not meet all three of the following conditions as required in Rule 710a(2)(b):

- Sample that is one liter in volume.
- Sample that is first draw after the water has sat motionless in the plumbing for not less than six hours. Non-first draw samples may be allowed in facilities such as a prison or a hospital under Rule 710a(2)(e).
- Sample from either a:
    - Residential site cold water kitchen tap or bathroom sink tap, or
    - Nonresidential site interior tap typically used for consumption.

"Invalid sample" – a sample that meets one or more of the following conditions under Rule 710a(6):

- The laboratory establishes that improper sample analysis caused erroneous results.
- The sample container was damaged in transit.
- There is substantial reason to believe that the sample was subject to tampering.
- Field staff determine that the sample was taken from a site that did not meet sample site criteria as listed in Rule 710a(1)(c) to (e) and (h) for CWS and listed in Rule 710a(1)(f) to (h) for NTNCWS.

"Optimal water quality parameters (OWQP)" – the water quality parameters with limits, values, and dosages set by field staff under Rule 604f(3)(f) that represent optimal corrosion control treatment (CCT).

"Reduced number of sites" – the number of distribution system sites sampled for either:

- Lead and copper under the reduced monitoring column in the table in Rule 710a(3)(a) or
- WQP in Rule 710b(7)(a).

"Small, medium, or large water supply" – a water supply serving 3,300 or fewer people (small), greater than 3,300 and fewer than 50,001 people (medium), or more than 50,000 people (large), respectively.

"Standard number of sites" – the number of distribution system sites sampled for either:

- Lead and copper under the standard monitoring column in the table in Rule 710a(3) or
- WQP in Rule 710b(3)(a).

"Water quality parameters (WQP)" – parameters that are monitored for at the entry points to the distribution system and in the distribution system during the initial monitoring periods prior to CCT, during the follow-up monitoring period after CCT is installed, and during each six month monitoring period after field staff designate optimal CCT.

POLICY:

1. Summary of Rule Requirements

Corrosion causes lead and copper to leach from pipes in the distribution system. The LCR requires water supplies to optimize CCT to minimize consumers' exposure to lead and copper in drinking water.

Water supplies select and monitor distribution system sites that are most at risk of corrosion. Field staff may consider the small or medium water supply as having optimized CCT if results do not exceed the action level (AL) for lead of 0.015 milligram per liter (mg/L) and copper of 1.3 mg/L in 90 percent of sites tested during two consecutive six-month monitoring periods. Small and medium supplies that cannot demonstrate optimal CCT in two consecutive six month monitoring periods must commence CCT steps. All large water supplies must complete CCT steps, regardless of lead and copper levels. A water supply notifies consumers of the lead levels found at the site that was tested. Any supply that exceeds the lead AL must provide public education (PE) materials.

Source water treatment or lead service line replacement may be required when an AL continues to exceed after installing CCT. This policy does not discuss source water treatment or lead service line replacement.

2. Site Selection

a. Summary of Rule Requirements:
Water supplies select distribution sites that are most at risk of corrosion and categorize each site as Tier 1, 2, 3 based on risk. If insufficient Tier 1, 2, or 3 sites are available, the sampling pool is completed with representative sites with plumbing materials commonly found at other sites in the distribution system. As a site becomes unavailable, the site may be replaced provided the new site is selected based on Tier 1, 2, and 3 priorities. A replaced site should be explained when reporting on lead and copper monitoring.

b. Selecting Tier 1 Sites Based on Year Built:
Tier 1 sites are single family structures with:
   i. lead piping, or
   ii. lead service lines, or
   iii. copper piping and lead solder built after 1982 as per rule. It is believed that the corrosion may have stabilized in pipes of older structures built in 1982 or before, while newer pipes may continue to leach lead and copper for some time. However, due to a lead ban in 1987, structures built in 1987 or later were considered lead free. Therefore, Tier 1 sites with copper piping and lead solder are structures built after 1982 and before 1987.

c. Softeners and Other Point of Use (POU) and Point of Entry (POE) Devices:
Sampling sites with faucets that have POU or POE treatment devices, such as softeners, shall not be used as Tier 1, 2, or 3 sites unless insufficient Tiered sites are available. Field staff shall encourage water supplies to sample from a kitchen or bathroom tap that is not normally connected to the softener. If a sample of softened water is analyzed, then the water supply may consider returning to the same site to collect a sample of unsoftened water. Some residents may be able to bypass the softener at the tap. Both sample results (softened and unsoftened) will be used to calculate the 90th percentile. Sample results shall not be deemed improper on the basis that the water passed through a softener.

d. Supplies that bottle water:
An NCWS that is a water bottling plant and has fewer than 25 employees is classified as an NTNCWS, but all sampling under Act 399 is conducted at the raw water tap. All other sampling of the plant distribution system or bottling and packaging facility is done under the authority of the Michigan Department of Agriculture and Rural Development under Section 17 of Act 399, MCL 325.1017.

3. Monitoring Requirements

a. Summary of Rule Requirements:
The required number of distribution system sites is based on the population served. A water supply may sample more than the required number in a monitoring period. Supplies with fewer than five taps, must sample 100 percent of taps typically used for human consumption.

b. Monitoring Period:
Annual and triennial monitoring is conducted during the months June through September unless an alternate four-month period is designated.

c. Insufficient Number of Samples Collected:
When fewer than the required number of samples are collected, field staff issue a monitoring and reporting (M/R) violation and calculate the 90^{th} percentile based on available data. To return to compliance with monitoring requirements, field staff should direct the water supply to monitor again in the next available monitoring period – next six-month period, for those supplies on a six-month frequency, or next calendar year, for

those supplies on reduced monitoring. Establish the next due date based on the return to compliance date and the previously assigned frequency.

d. Improper Sample:
Samples deemed improper are not used to calculate the 90th percentile. A water supply may deem a sample improper by not submitting the sample to the lab for analysis. Once a sample is analyzed, only the field staff may deem a sample improper with approval from the:
   i. Community Drinking Water (CDW) Unit Chief and notification of the Field Operations Section Chief, for CWSs, or
   ii. Noncommunity and Private Drinking Water Supplies (NPDWS) Unit Chief approval and notification of Environmental Health Section Chief for NTNCWS.

To deem a sample improper, field staff investigates all samples collected in the monitoring period and analyzed. The investigation includes a review of documents that demonstrate compliance with monitoring and testing requirements (for example, the Instruction Sheets that are completed by the resident). Extended stagnation is not a sufficient reason to deem a sample improper. Encourage water supplies to select sites that are in regular use. The supply may collect a replacement sample for a sample deemed improper provided the monitoring period has not ended.

e. Reduce Monitoring for Only One Contaminant:
Monitoring cannot be reduced for only one contaminant. The monitoring frequency is the same for both lead and copper, except under partial waiver provisions. To date, field staff have not granted full or partial waivers under Rule 710a(7).

f. Reduced Monitoring When Copper Exceeds AL:
Reduced monitoring is allowed in the rule when the copper 90th percentile exceeds the AL, provided the lead 90th percentile meets the AL after optimizing CCT under Rule 710a(4)(d)(ii) and (iii). However, the DEQ believes that a supply with a copper AL exceedence should remain on a six-month frequency for both lead and copper and will not reduce the monitoring frequency when an action level is exceeded.

4. Calculate Compliance

a. Summary of Rule Requirements:
Steps to calculate the 90th percentile are listed in Rule 604f(1)(c). When fewer than the required number of sample results is available, the 90th percentile is calculated based on the available data. When five samples are collected, the 90th percentile is the average of the highest and second highest concentrations. When fewer than five samples are collected, the sample result with the highest concentration is the 90th percentile.

b. All Samples Analyzed Are Used to Calculate 90th Percentile:
All samples collected and analyzed within the monitoring period are used to calculate 90th percentile. However, samples deemed improper or invalid, even if analyzed, are not used to calculate the 90th percentile.

c. Samples Collected Outside Monitoring Period
Samples taken outside the monitoring period are not used to calculate compliance. However, one exception exists – when a sample is deemed invalid and the supply has too few samples to meet the minimum requirements, the supply collects a replacement sample not later than 20 days after the date the sample was invalidated or by the end of the monitoring period, whichever occurs later, as allowed in Rule 710a(6)(d).

d. Multiple Samples From Same Site:
Multiple samples collected from the same site during the monitoring period are all used to calculate the 90th percentile (do not average the multiple results). Samples collected outside the monitoring period are not included in the 90th percentile.

5. Corrosion Control

a. Equivalent Corrosion Control Steps:
At this writing, CWS have used CCT steps as per rule rather than equivalent activities. Under Rule 604f(2)(b)(ii), a water supply may be considered by field staff to have optimized CCT if the supply demonstrates to the satisfaction of field staff that it has conducted activities equivalent to the CCT steps applicable to the water supply under Rule 604f(3). This determination is on a case-by-case basis after field staff have consulted with the water treatment specialist for CWS or the NPDWS Unit Chief and staff for NTNCWS. Field staff provide the supply with written notice explaining the basis for its decision and specifies entry point OWQPs.

b. Modification of DEQ Treatment Decisions:
Under Rule 604f(3)(h), the DEQ may modify its optimal CCT determination based on its own initiative or in response to a supply's proposal to modify existing treatment or OWQPs under Rule 604f(3)(g). Each revised determination is made in writing, sets forth the new treatment requirements, explains the basis for the decision, and provides an implementation schedule for completing the treatment modifications.

c. Change in Treatment or Addition of a New Source:
Water supplies are required to notify field staff of an upcoming long-term change in treatment or the addition of a new source under Rule 604f(2)(b)(iii)(C), Rule 710a(4)(d)(vii), and Rule 710a(7)(d)(iii). Field staff may require the water supply to conduct additional monitoring or take other actions to ensure that CCT remains optimized. If the water quality and characteristics of the new source are similar to the supply's existing sources, then field staff may consider the new source as not adversely affecting the supply's CCT and no further action is needed.

6. Consecutive Systems (CS)

Systems must monitor as per rule based on their population. On a case-by-case basis, the DEQ may consider the entire combined distribution system of consecutive systems when establishing monitoring requirements.

a. Consecutive System Approach:
Some CS own their distribution system, but essentially have no water department. These CS purchase water retail and rely fully on the seller to provide all services including monitoring, operation, and maintenance of the distribution system. The combined distribution system (CDS) is considered one system for the purpose of complying with this rule.

b. Modified Consecutive System (MCS) Approach:
Some CS own and operate their distribution system. These CS purchase water wholesale and may rely on the seller to provide certain services through a variety of arrangements and agreements. The entire CDS is treated as one system for the purpose of determining the total number of lead and copper distribution system sites and WQP distribution system sites.

The U.S. EPA allows states to propose Modified Consecutive System (MCS) monitoring protocols for these large combined distribution systems (CDS) subject to U.S. EPA approval on a case-by-case basis. Field staff should work through Lansing central staff when proposing an MCS for a particular group of supplies to ensure consistent implementation among districts and with the U.S. EPA.

c. MCS General Requirements:
   1. The entire combined distribution system (CDS) is treated as one system for the purpose of determining the number of lead and copper tap samples. The total CDS reduced number of sites must be greater than or equal to the reduced number of sites for an individual system of equal size under Rule 710a(3).
   2. The number of lead and copper distribution system sites required in each consecutive system (CS) is based on percent of population of the CDS. Each CS collects no fewer than five samples.
   3. Each CS demonstrates compliance with sample site selection, lead and copper ALs, and monitoring requirements in the distribution system. In some wholesaler/CS arrangements, the wholesale system may agree to coordinate the collection of the samples, but the CS is responsible to comply.
   4. A CS may reduce the number of sites to no fewer than the reduced number for an individual system of equal size under Rule 710a(3). In most cases a CS is not eligible to reduce the number of sites, even if the CDS is able to reduce. The MCS number of sites is usually already lower than the reduced number for an individual system of equal size.
   5. A CS that exceeds an AL returns to standard number of sites for a system of equal size until both ALs are met in two consecutive six-month monitoring periods. Reduced monitoring may apply, including accelerated reduced frequency under Rule 710a(4)(d)(v). The CS may resume MCS monitoring under the CDS protocol when the CS frequency matches that of the CDS (for example, the CS may rejoin the CDS that samples triennially, when the CS qualifies for triennial monitoring).
   6. The MCS approach also extends to WQP because the purpose is to look at the entire CDS.
      (a) The numbers of distribution system sites are based on the population of the CDS. However, no minimum number of distribution system sites is required

in any single CS in the CDS, provided the entire CDS meets the number of sites required. Selection of WQP distribution system sites should represent the entire CDS.

(b) A CS that exceeds an AL must also monitor the following, if not already doing so:

- WQP distribution system monitoring: A CS that is already monitoring for WQP in the distribution system at a reduced number of sites is not required to increase to standard number of sites unless the CDS is required to do so. However, if a CS is NOT already monitoring WQP in the distribution system and they exceed an AL, the CS must monitor WQP at the standard number of sites until both ALs are met in the most recent round of sampling.
- Entry point monitoring: WQP and entry point lead and copper samples must be collected at each entry point that serves the CS (that is, the entry point at the treatment plant, not at the consecutive connection). In order for the wholesale supply (treating/selling supply) to perform this monitoring, the CS must inform the wholesale supply that the CS exceeded an AL.
- Medium or small CDS monitor WQP only in monitoring periods that exceeded an AL. All large CDS monitor WQP, regardless of lead and copper levels.
- Failure to maintain OWQP at the entry points (for all large supplies and for small and medium-sized supplies that exceed an AL after installing CCT) are excursions as outlined in Rule 604f(3)(f). An excursion is a treatment technique violation.

7. A CS that exceeds the lead AL is responsible to issue PE and to replace lead service lines as per rule.
8. The wholesale supply complies with requirements associated with CCT.

PROCEDURES:

WHO	DOES WHAT
Field staff, except as listed below	Make determinations and recommend actions requiring supervisor approval.
CDW Unit Chief for CWS or NPDWS Unit Chief for NTNCWS	Review and approve field staff's designation of improper sample.
Water treatment specialist for CWS or NPDWS Unit Chief and staff for NTNCWS	Consult with field staff as field staff determine on a case-by-case basis whether a water supply has optimized CCT using equivalent CCT steps.
CWS field staff	Work with CDW Unit staff when proposing an MCS monitoring protocol.
CDW Unit staff	Coordinate with U.S. EPA to receive approval on a case-by-case basis for MCS monitoring protocol.

REFERENCES:

See Authority section of this policy.

OFFICE CHIEF APPROVAL:

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1/14/2013
Date

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1/17/2013
Date