UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711
OFFICE OF AIR QUALITY PLANNING AND STANDARDS

Technical Note - Lead Data Reporting to AQS

On November 12, 2008, EPA substantially strengthened the National Ambient Air Quality Standard (NAAQS) for lead (73 FR 66964). With a revised lead NAAQS we have established new AQS parameter codes to provide for consistent reporting and use of data. The information below is being provided so that any samples collected beginning January 1, 2009 can and should be reported consistently with the new NAAQS. We are also providing additional details on other AQS codes for reporting of lead data. Certain software changes to align AQS standard reports with the form of the revised NAAQS are also being planned.

AQS Codes Assigned at the Monitor Level

Parameter Codes for Lead Measurements

The revised lead standard is based on the lead concentration being reported in units of micrograms per cubic meter at local conditions. Under the old NAAQS, lead concentrations have been reported as parameter 12128 in micrograms per cubic meter under conditions of standard temperature and pressure. This change in reporting units requires the creation of new parameter codes for reporting of data that will be compared to the revised NAAQS. In order to store all lead data, several codes have been assigned to ensure that data can be identified with respect to sampling methodology to ensure all data under parameter codes is well defined. Also, although the new standard is still based on total suspended particulate (TSP), there is also an allowed surrogate, lead in the PM_{10} size range. Based on these new requirements, Table 1 provides the parameter codes available for lead monitoring:

Table 1. Parameter Codes for Lead Measurements

	Lead in TSP		**Lead in PM_{10}**	
	FRM/FEM	**Non-FRM/FEM**	**FRM/FEM**	**Non-FRM/FEM**
Local Conditions (LC)	14129 Lead TSP LC FRM/FEM	14128 Lead (TSP) LC Non-FRM/FEM	85129 Lead PM10 LC FRM/FEM	85128 Lead PM10 LC
Standard Temperature and Pressure (STP)	12128 Lead (TSP) STP		NA	82128 Lead PM10 STP

The following list provides a summary of the new parameter codes:

14128 Lead TSP LC Non- FRM/FEM
Use this parameter code for data collected after January 1, 2009 by methods **not** approved as reference or equivalent. This parameter code can also be used for the optional conversion to local conditions for data collected before January 1, 2009 by non-FRM/FEM methods, already reported as 12128 Lead TSP STP.

14129 Lead TSP LC FRM/FEM
Use this parameter code for data collected after January 1, 2009 with reference or equivalent methods operated on local conditions. This parameter code is expected to be used for NAAQS comparable measurements of lead in TSP. This parameter code should also be used for the optional conversion to local conditions of data collected before January 1, 2009 by FRM/FEM methods, already reported as 12128 Lead TSP STP.

85129 Lead PM10 LC FRM/FEM
This parameter code should be used for data collected after January 1, 2009 for reference or equivalent methods. This parameter code is expected to be used for newly required measurements of lead in PM_{10}.

These new parameter codes must be used to create new monitor records in AQS for data reporting.

Parameter Codes for Meteorological Measurements

The reporting changes also include the requirement to submit temperature and pressure information for Lead TSP LC and Lead PM_{10} LC sampling values. If these parameters are already being reported from on-site PM_{10} or $PM_{2.5}$ samplers, the requirement is met. If this reporting is not met by PM_{10} or $PM_{2.5}$ reporting, agencies can operate on-site meteorological equipment and use current reporting codes, can reference another AQS site for meteorological data, or can report nearby meteorological data.

If an agency elects to reference another AQS site for temperature and pressure rather than reporting at the existing site, the other site can be referenced on the AQS site record by adding data with Maintain site or the AA transaction. The fields that must be entered include:

1. Meteorological Site Type – OTHER AIRS SITE
2. Meteorological Site ID – state, county, site ID for the other site
3. Distance to Meteorological Site – in meters
4. Direction to Meteorological Site – compass sector

An agency may elect to report off-site meteorological data, where the station is not operated by the monitoring agency (e.g., a national whether service station). Utilize the parameter codes provided in Table 2 for reporting of off-site meteorological data:

Table 2. Parameter Codes for Meteorological Measurements

Parameter	Parameter Description	Collection Description	Analysis Description	Duration	Units
62101	Outdoor Temp	Instrumental	Off site weather data	1- hr	Deg F
64101	Baro Pressure	Instrumental	Off site weather data	1- hr	Millibar
68105	Avg Temp	Average	Off site weather site	24-hr	Deg C
68108	Baro Pressure	Average	Off site weather site	24-hr	Mm Hg

The method code for all of these off-site meteorological measurements is "803", which is the code for the lead TSP LC reference method. When creating these new monitors, all of the current completeness business rules for site and monitor metadata must be met.

Monitoring Objectives

With the revised lead NAAQS, network design criteria apply at certain source-oriented and non-source oriented locations. Lead monitors must therefore be assigned a monitoring objective associated with monitoring requirements described in Appendix D to 40 CFR Part 58. When populating monitoring objective, AQS requires that the area represented also be populated. Although the scale of representation and impacts from nearby sources of lead will play a large role in the "area" that a monitor represents, for convenience and consistency we are requesting that only "CBSA Represented" be populated along with each monitoring objective. Please enter the applicable CBSA for each lead monitor when entering monitoring objective.

Table 3. Monitoring Objectives

Required Monitoring	Monitoring Objective	Area Represented
source-oriented stations described in section 4.5(a) of Appendix D to 40 CFR Part 58[1]	SOURCE ORIENTED	1. Applicable CBSA code, or 2. If not in a CBSA, populate 0000 in UA Represented
non-source-oriented stations described in section 4.5(b) of Appendix D to 40 CFR Part 58[2]	POPULATION EXPOSURE	Applicable CBSA code

[1] Also, applies to any additional source-oriented monitoring, beyond the minimums, described in 4.5(c) of Appendix D to 40 CFR Part 58.

[2] Also, applies to any additional **non**-source-oriented monitoring, beyond the minimums, described in 4.5(c) of Appendix D to 40 CFR Part 58.

Other monitoring objectives may apply for existing Pb stations.

Sample Frequency

For each lead monitor, a required sampling frequency must be entered. The expected sample frequency is "6" associated with sample collection every sixth day. Although the business rules will not require this entry until the software is modified, EPA staff will be checking manually for this entry. EPA encourages AQS users to also retroactively enter the required monitoring frequency for their existing 12128 monitors at the same time to avoid possible future confusion.

Monitor Type Assignment

Monitor type assignment is a required field that provides useful information on a monitoring station's administrative classification. For required stations the monitor type is expected to be SLAMS; however, monitors at other stations may have different monitor types. Also, data submitters may populate with more than one monitor type. Table 3 provides the expected monitor types for use in the lead monitoring network.

Table 4. Monitor Types for Lead Monitoring

	Monitor Type Assignment	Notes
One of the following monitor types is expected for each monitor record	SLAMS	Expected for all minimally required monitors or other monitors required by the Regional Administrator
	TRIBAL MONITORS	
	SPM	
	QA Collocated	
Additional Monitor Types that may be associated with lead monitoring	Non-Regulatory	Cannot be applied to SLAMS; Regional Office approves
	Industrial	For stations run by industry

Measurement Scale

Although measurement scale is not a required field, we are asking that this field be populated with each new monitor record. Table 4 provides the measurement scales expected to be most widely used in the lead monitoring network.

Table 5. Measurement Scales for Lead Monitoring

Measurement Scale	Expected Options for Source Oriented Monitoring	Expected Option for Non-Source Oriented Monitoring
Microscale 0 M to 100 M	X	
Middle Scale 100 M to 500 M	X	
Neighborhood Scale 500 M to 4 KM		X

Dominant Source

For source-oriented stations, a dominant source should be populated with each monitor record. Non-source-oriented stations are not expected to have this field populated. Table 5 provides the expected codes for dominant sources.

Table 6. Dominant Sources for Lead Monitoring

Dominant Source	Expected Options for Source Oriented Monitoring	Notes
Point	X	
Mobile	X	This field may apply if the emissions are associated with an airport

AQS Codes Assigned at the Site Level

Primary Monitor Periods

When creating a new lead monitor using one of the parameter codes (14129 and 85129) for reference or equivalent methods, there is also an additional site level requirement. Similar to the $PM_{2.5}$ standard, the lead standard is based on site level summaries. This will permit samples missing from the primary monitor to be replaced by a sample reported by a collocated monitor. This requires the designation of a primary monitor using Maintain Site for every lead monitor even though there may not be a collocated sampler.

Latitude and Longitude

We recommend monitoring agencies use a late model GPS device and verify coordinates for existing stations. Coordinates for new stations should be established as soon as practical.

Other Notes:

Multi-day composite sample reporting is not an option with the new parameter codes: 14128, 14129, and 85129.

The new FRM/FEM parameters (14129 and 85129) will be limited to the reference or equivalent methods, as designated by EPA and available on the TTN.[3] These new methods are also available at the address below included with other criteria parameters.

http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm

The address above also contains a list of all valid combinations of parameters and qualifier codes. For lead parameters, all currently defined exceptional/natural qualifiers can be used except high pollen count and stratospheric ozone intrusion which do not apply.

The existing lead parameter 12128 will also remain operational, but its descriptive name has been revised to "Lead TSP STP" to indicate that it represents concentrations under conditions of standard temperature and pressure. Agencies conducting lead TSP monitoring may choose to continue to report using this parameter as well as one of the new parameters based on the method status. This may be appropriate for areas still designated nonattainment under the old standard, which for the time being remains legally relevant in such areas. Note that 12128 can be used with either FRM/FEM or non-reference methods. Existing lead parameters 82128 and 85128 will also remain operational, for reporting of lead in PM_{10} at standard temperature and pressure and at local temperature and pressure, respectively. These parameters are currently typically used for lead monitoring with an air toxics focus.[4] However, if monitoring of lead in PM_{10} at local temperature and pressure makes use of a reference/equivalent method, it should be reported under the new parameter 85129; also, EPA encourages AQS users to retroactively assign 85129 to their lead in PM_{10} data if a reference/equivalent method was used.

The field Project Class is somewhat redundant with Monitoring Objective; therefore, at this time we are not asking for this field to be populated. We encourage those agencies that have consistently populated this field, and especially those with on-going lead monitoring programs, to continue to utilize this field.

Calculation Changes

The calculations currently performed for all 24-hour samples will be performed for the new lead parameters listed above. These calculations include:

[3] Agencies previously using any of the following non-reference/equivalent method codes for parameter 12128 should consult with the Regional Office, as these methods are not appropriate for required lead monitoring at SLAMS sites: 074, 089, 090, 091, 092, 095, 101, 108, 114, 115, 304, 305, 905, or 910.
[4] EPA prefers that air toxics monitoring for lead in PM10 use 85128.

(1) The reported value is converted to standard units (105 – micrograms per cubic meter at local conditions) when not reported in those units. For these lead parameters, the substitution of ½ MDL is not performed. The standard value is stored to 4 significant digits with truncation.

(2) The daily summary records will be computed for the lead parameters.

(3) The quarterly and annual summaries will be computed for all lead parameters. The summaries listed above for lead for data beginning in 1993 to present for parameters 12128, 82128, and 85128 have been recomputed to omit the ½ MDL substitution.

(4) In addition to the listed monitor summary records, site level combined data records are created for parameters (14129 and 85129) for reference or equivalent methods so that whenever there is a collocated sampler that has reported data for a day missed by the primary monitor, the substitution will be made so that a more complete data set is available for design value determination.

When AQS software modifications to implement the NAAQS for lead are completed, the additional statistics (monthly and rolling three month means) specified in the standard will be available for parameters 14129 and 85129.