

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES REMEDIATION & STORAGE TANK PROGRAMS**

Technical Memorandum - 01-006 Version 1.1

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Requirements for using AK-102-AA and AK-103-AA during the 2001 Field Season

PURPOSE:

This technical memorandum documents current applicability and quality assurance/quality control (QA/QC) reporting requirements for AK-102-AA and AK-103-AA. This Technical memorandum does not apply to AK-101-AA

BACKGROUND:

Alaska (AK) 102 AA and 103 AA analytical standard operating procedures, as written in the Underground Storage Tank (UST) Procedure's Manual (December 1, 1999), provides for flexible performance based improvements (modifications), which have resulted in differing interpretations by [approved laboratories](#). Those modifications have unintentionally resulted in inter-laboratory performance issues. Discussions during Public Advisory Petroleum Hydrocarbon Work Group meetings have provided strong technical information, which will be used to propose method improvements. However, it is unlikely that round robin testing of any proposed modifications would be completed prior to the field season 2002.

If you have any comments regarding this technical memo or would like additional information regarding AK-102-AA and AK-103-AA, please contact Dave Verbrugge at 907-269-7691

RECOMMENDED ACTION

Due to the uncertainties surrounding the repeatability, accuracy, and precision of the current AK-102AA and AK-103AA methods, DEC requests that Staff, Responsible Parties, Landowners, Consulting Firms and other stakeholders should refrain from using AK-102-AA and AK-103-AA methods during the 2001 field season. If AK-102AA and AK-103AA methods are implemented despite this recommendation, alternative action requirements must be followed.

ALTERNATIVE ACTION REQUIREMENTS

In the interim, if AK 102-AA or 103-AA is requested, the following requirements must be met in order to ensure results can be used in the cleanup decision-making process:

1. Prior to collecting field samples, request site-specific approval to use 102-AA/103-AA from the DEC project manager.
2. The DEC Project Manager should discuss the applicability of these methods for a specific site with their Section Manager.
3. If 102-AA/103-AA methods are approved by the project manager for site specific use, the following analytical QA/QC requirements must be met:
 - 3.1. Method QA/QC must meet criteria as specified in the DEC UST Procedures Manual, 1999 and individual method standard operating procedures in the Appendices.
 - 3.2. Complete continuing calibration verification (CCV) using a known fuel standard (not a synthetic hydrocarbon mix). Submit the name of the fuel standard, concentration, and vendor information along with other QA/QC reportables.
 - 3.3. For the Laboratory Control Sample (LCS) and Matrix Spike (MS), calculate and report recoveries per component. Also report per component aliphatic/aromatic cross-over, where cross-over is defined as the amount of an aliphatic compound detected in the aromatic fraction.

For example:

LCS	%Recovery	%Cross-Over
Aliphatic 1		
Aliphatic 2		
Aliphatic 3		
Aromatic 1		
Aromatic 2		
Aromatic 3		

- 3.4. For each field sample, analyze splits of the dichloromethane sample extract using both AA and non-AA methods (i.e. for DRO use 102 and 102AA and for RRO use 103 and 103AA).
- 3.5. Data Deliverable packages submitted to DEC must have all items on the Lab Data Report Check Sheet, Appendix C of the UST Procedures Manual, 1999. Also include copies of the GC chromatograms with the QA/QC deliverable package.
4. OPTIONAL: Since the AA series methods are often used at sites where biogenic interference is a concern, developing a site characterization plan for TOC is also recommended. TOC data may be used in subsequent natural background investigations and Method 3 alternative cleanup level determinations.
5. Evaluate usability of reported data. Data usability decisions are based on type of QA/QC failure, reported field sample concentration, and to some extent field sampling logistics (it may not be possible to collect another sample). Many corrective actions are possible (and within DEC's authority), including:
 - rejection of data set
 - adjust the reported result
 - use unmodified resultThe Critical QA/QC Failures list does not provide corrective actions. The Critical QA/QC Failures list identifies for staff and stakeholders those QA/QC failures most likely to impact a field sample whose reported concentration is near the action limit (i.e. cleanup level). Critical QA/QC Failure criteria are taken from the analytical method performance criteria. The intent of the list is to focus initial data review efforts. If staff identify a problem, they should contact someone for assistance. Critical analytical method QA/QC failures include:
 - CCV exceeds $\pm 15\%$ of the certified concentration. This demonstrates calibration bias.
 - LCS component recovery exceeds boundary limits of 70-120 %. This demonstrates general method bias.
 - LCS cross-over exceeds 10%. This demonstrates silica gel chromatography failure.
 - MS component recovery is less than 50%. This demonstrates possible failure to extract analyte from matrix.
 - Surrogate recovery from field samples is less than 50%. This demonstrates possible failure to extract analyte from matrix.
6. If reported QA/QC data meet all method performance requirements, AA series field sample results should be taken as valid (representative of site). In this case, total DRO/RRO data should not be used in place of Aliphatic/Aromatic data, without concurrence of the Section Manager.
7. If reported QA/QC data do not meet all method performance requirements, additional QA/QC review is necessary. AA series field sample results may be replaced by DRO/RRO field sample results.

REFERENCES:

Alaska Department of Environmental Conservation. 1999. [Underground Storage Tank Procedures Manual](#), December 1, 1999, Storage Tank Program

Alaska Department of Environmental Conservation. 2000. [Guidance for Cleanup of Petroleum Contaminated Sites](#), Contaminated Sites Remediation Program