



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Bryan Tyler
Enthalpy Analytical
800-1 Capitola Drive
Durham, North Carolina 27713

06/19/2020

Dear Mr. Tyler:

We are writing in response to your letter of March 18, 2020, requesting approval for use of alternative analytical procedures for the analysis of organic acid samples from Method 18 (40 CFR 60, Appendix A). You requested a broadly applicable alternative method approval to apply under Federal rules found in 40 CFR parts 59, 60, 61, 63, and 65 that require measurement by Method 18. The Office of Air Quality Planning and Standards, as the delegated authority, must make the determination on any major alternatives to test methods and associated procedures required under 40 CFR parts 59, 60, 61, 63, and 65.

In your letter, you request the use of High-Performance Liquid Chromatography (HPLC) for the analysis acetic acid, formic acid, and lactic acid (organic acids) from samples collected according to the adsorption tube procedure of Section 8.2.4 of Method 18 for both the adsorbent and any aqueous fractions caught in a midjet impinger before the adsorbent tubes. You explain that your experience shows that when testing for organic acids, HPLC provides better response, peak shape, and reproducibility compared to Gas Chromatography (GC), which is the basis of the existing method. Additionally, you discuss the limitations of GC when utilized for the analysis of highly polar compounds and the inadequacy of most GC columns for separating these types of compounds in a water matrix.

In an effort to demonstrate the efficacy of this approach for these organic acids, you provided us with a laboratory study demonstrating the acceptable recovery and stability of these analytes for the adsorbent media (silica gel) and in water. You also provided supplemental information in the form of a Standard Operating Procedure (SOP) detailing the processes that your laboratory follows when performing this analysis. Based on our review of your laboratory study and your SOP for performing analysis of organic acids by HPLC, it appears the laboratory study followed the quality control (QC) requirements found in Method 18 for the adsorption tube procedure of Section 8.2.4 of Method 18. Furthermore, the equipment, reagent materials, and instrumental operations identified in your SOP also parallel the requirements of Method 18 and are designed to provide good resolution needed to measure organic acids.

Based on the data presented demonstrating the validity of this analytical technique and the performance-based nature of Method 18 measurement, we are approving your alternative test method request to allow the use of HPLC in place of GC while meeting all the other requirements of Method 18 for the purpose of measurement of acetic acid, formic acid, and lactic acid. In keeping with the performance-based nature of Method 18, we are not requiring the use of a specific detector, column, mobile phase, or instrumental operations to allow for flexibility

when performing this analysis. Facilities and testers utilizing this alternative method must include a copy of this approval letter in each test plan and test report containing data generated with the alternative method.

It is reasonable that this alternative test method approval be broadly applicable to conducting measurements according to Method 18 under the Federal regulations found in 40 CFR parts 59, 60, 61, 63, and 65. For this reason, we will post this letter as ALT-136 on our website at <http://www3.epa.gov/ttn/emc/approalt.html> for use by other interested parties. This alternative test method approval is applicable for use to demonstrate compliance with a promulgated standard in subparts of 40 CFR 59, 60, 61, 63 and 65. This approval does not address the use of this alternative method for performance testing using Method 18 required under State Implementation Plans (SIP) or state/local/tribal regulations. Application of this alternative test method for such regulations is subject to the approval of the administrative authority for such programs.

If you should have any questions or require further information regarding this approval, please call Ned Shappley of my staff at 919-541-7903 or email him at shappley.ned@epa.gov.

Sincerely,



Steffan M. Johnson, Group Leader
Measurement Technology Group

cc: Lula Melton, EPA/OAQPS/AQAD
Ray Merrill, EPA/OAQPS/AQAD
Robin Segall, EPA/OAQPS/AQAD
Ned Shappley, EPA/OAQPS/AQAD
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