Use of Modified Methods for
Analysis of Water and Wastewater in Missouri
Fact Sheet

INTRODUCTION
This fact sheet describes the steps a wastewater treatment plant (WWTP) operator or analytical laboratory must take for the use of the modified methods, as well as all quality control measures required under CFR 136.6. Included here is guidance for modified methods for compliance sample analysis related to Missouri State Operating Permits.

A wastewater treatment facility or operator may choose to analyze compounds using a modified method for chemical analysis at their facility’s laboratory to save costs of professional lab analysis. However, because many of these chemical analytical methods are modifications of Standard Methods for the Examination of Water and Wastewater, they require notification to the Department and extensive Quality Assurance and Quality Control (QA/QC) for their use.

Using modified methods is allowed under Title 40, Part 136.6 of the Code of Federal Regulations (40 CFR 136.6). Examples of allowed method modifications are listed in 40 CFR 136.6. For example, the Hach Test-in Tube (TNT) methods in water are allowed as modified methods of the Standards Methods for the Examination of Water and Wastewater. However, supporting documentation of a modified approved method (as listed in 40 CFR 136.3, Table 1B) must be provided to the Department for the matrix in which the modified method will be applied. If supporting documentation cannot be provided, the modified method is not an acceptable alternative to the approved method.

If a facility wants to use a modified method, 40 CFR 136.6 states that the use of a modified method requires all QA/QC to be performed as required in the approved methods listed in 40 CFR 136.3, Table 1B, not just the manufacturer’s method QA/QC.

PROCESS FOR USING A MODIFIED METHOD
According to 40 CFR 136.6, when a wastewater facility decides to use a modified method, as allowed under this regulation, it must follow these steps:
1. A wastewater facility must notify the Department of their intent to use a modified method. Notifications shall be in the form of “Method XX has been modified within the flexibility allowed in 40 CFR 136.6.”
2. The wastewater facility or laboratory must submit all QA/QC data to prove accuracy and equivalency of the selected method. If either operates or performs analysis of multiple wastewater treatment plants, a comparison study must be submitted for each wastewater plant’s effluent (sample matrix). All data must be sent to the Department for approval before use.
3. The facility’s laboratory must follow all QA/QC requirements each time the tests are run for compliance reporting to the Department. A list and description below explains the supporting documentation to be performed and submitted to the Department before the modified method is used for permit compliance data.
4. The wastewater treatment facility must receive Department approval before it begins using the modified method for compliance data.
Failure to follow all these steps before using the method for compliance samples is a violation of the CFR 136.6 and 10 CSR 20-7.015(9)(D)2, and the facility must cease use of the modified method.

SUPPORTING LABORATORY DOCUMENTATION
Supporting documentation must include routine initial demonstration of capability and ongoing quality control (QC) determination of precision and accuracy, detection limits and matrix spike recoveries. Requirements for establishing equivalent performance are provided in 40 CFR 136.6. **Ongoing quality control** requires method blanks, mid-level laboratory control samples and matrix spikes (QC is as specified in the method). The method is considered equivalent if the quality control requirements in the reference method are achieved.

Common quality control requirements include, but are not limited to:
1. Determine that the Linear Calibration Range (LCR) is within ±10%, initially and every six months, using at least three standards and a blank.
2. Run a Quality Control Sample (QCS) initially, on a quarterly basis, or as required. The source must be different than the standard used for calibration standards, either by lot number or vendor.
3. Establish a Method Detection Limit (MDL) for all analytes, using seven aliquots of fortified reagent water, at a fortified concentration of two to three times the instrument detection limit, preferably over a three-day period, to allow for instrument variability.
4. A Laboratory Fortified Matrix (LFM) and Laboratory Fortified Matrix Duplicate (LFMD) at a minimum of 10% of the routine samples, fortified with a known amount of analyte. Calculate percent recoveries for each analyte.
5. At least one Laboratory Reagent Blank (LRB) for each batch of samples.
6. A Laboratory Fortified Blank (LFB) for each batch of samples and calculate the recovery to ensure the recovery of any analyte is within ±10% of the control limit.
7. An Instrument Performance Check Solution (IPC) as a mid-range check standard, followed by a calibration blank, following initial daily calibrations, after every tenth sample and at the end of the sample run, to ensure the calibration is still within ±10%.
8. Any additional QC and calibrations required in the specific method.

Approved methods can be found online at: [epa.gov/cwa-methods/approved-cwa-chemical-test-methods](http://epa.gov/cwa-methods/approved-cwa-chemical-test-methods)
CFR 136.6 is found at: [ecfr.gov/cgi-bin/text-idx?SID=a6bb8a02b6d783f9356758b5ff0ed106&mc=true&node=pt40.25.136&rgn=div5#_top](http://ecfr.gov/cgi-bin/text-idx?SID=a6bb8a02b6d783f9356758b5ff0ed106&mc=true&node=pt40.25.136&rgn=div5#_top)

Nothing in this document may be used to implement any enforcement action or levy any penalty unless promulgated by rule under chapter 536 or authorized by statute.

Water Protection Program Fact Sheet
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