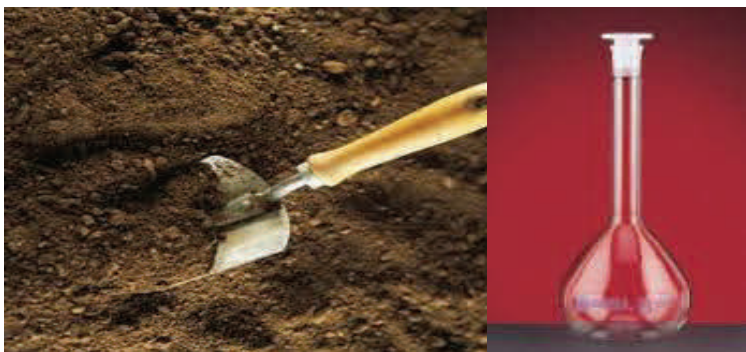


# Ensuring Chemistry Data Quality - AFCEC Performance Evaluation Program



## Laboratory Performance Evaluation

Analytical chemistry data provide the basis for multiple decisions in the Environmental Restoration program, including whether remedial action is required, monitoring clean-up progress, and closing out a site. The defensibility of these decisions directly relates to the defensibility of the data coming from the laboratory. One way of confirming a laboratory's competence and reinforcing data defensibility is the implementation of a laboratory performance evaluation (PE) program. A full PE program consists of proficiency testing (PT) samples produced by a third-party PT vendor, and samples split between the contract laboratory and a reference laboratory. PT samples have the advantage of customizable analytes and concentrations, which are verified at multiple reference laboratories. However the matrix used in the PT samples, especially soils, may not match the site matrix, making the samples less representative and also identifiable by the contract laboratory. Splitting samples from the site and sending one to a reference laboratory alleviates these matrix problems, but analytes and concentrations are not known ahead of time and performance is usually only evaluated by one reference laboratory.



## PE Program

For individual task orders, PE samples should be incorporated into project requirements. For optimized remediation contract awards, the contractor develops a project management plan (PMP) that outlines the work that will be accomplished at the sites covered under the contract. AFCEC will review the PMP, and recommend sites that will benefit from association with a PE program, or other extra surveillance measures. Sites that warrant additional attention may include high-risk, high-cost, or politically sensitive sites. The total amount and frequency of PE events will be dependant on the types of analyses and number of laboratories being used, but 2 events/year/base will be typical.

Once sites have been identified, AFCEC will work with the contractor to determine appropriate PT and split samples, and their scheduling. PT samples should have analytes that reflect the chemicals of possible concern at concentrations similar to what is expected to be found at the site. Split samples should be collected from sites where quantifiable concentrations of contaminants are expected. Split samples are especially important for solid matrices. Proper homogenization prior to splitting is critical for the success of split samples. The PE strategy should be documented in the project work plan. Worksheets 18, 20, 31, and 32 of the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) Workbook all contain entry fields for pertinent information. At least one month prior to the sampling at the site where PE samples will be implemented, the contractor's Chemist, or Project Manager will notify the AFCEC PE Program Manager of the upcoming sampling by email to [afcec.czte.chemistry@us.af.mil](mailto:afcec.czte.chemistry@us.af.mil). AFCEC will confirm the list of parameters to be evaluated and order the PT samples from the PT vendor or arrange analysis of split samples with a reference laboratory. PT samples are shipped directly to the prime contractor's Field Team Leader. The Field Team Leader will then ship the PT and field samples together to the laboratory, ensuring to the best extent practicable that the PT samples are processed and packaged the same as the field samples. The Field Team Leader would also ensure that split samples are collected properly and sent to the reference laboratory. AFCEC pays for the PT samples and the reference laboratory analysis.

## Evaluating The Results

Testing results from the contract laboratory will be sent to the prime contractor, who will then forward the PT sample results to the AFCEC PE Program Manager. Split sample results from the reference laboratory will be sent to the AFCEC PE Program Manager and then forwarded to the prime contractor. If any unexpected results occur, the result will be investigated and corrective actions will be implemented. A contract laboratory's performance in the PE program and its effect on the usability of the related data for the project should be discussed in the Data Usability or Data Evaluation portion of the project report.

Any questions, please contact [afcec.czte.chemistry@us.af.mil](mailto:afcec.czte.chemistry@us.af.mil).

# PE Program Flowchart

Identify sites/projects that would benefit from PE samples

AFCEC and Contractor will work together to choose an appropriate project. High cost/risk sites may be chosen. Test method and laboratory selection may also affect project selection.

Analytes for evaluation are defined. Split sample locations are identified.

Document PE strategy in project Work Plan

Contractor sends PE Program Manager PE event form 1 month prior to scheduled sampling date

Send form to [afcec.czte.chemistry@us.af.mil](mailto:afcec.czte.chemistry@us.af.mil)

## PT Sample Process

## Split Sample Process

PE Program Manager confirms list of analytes to be evaluated

Field Team Leader receives PT samples, assigns sample IDs, and ships to lab with field samples

PT samples are ordered by PE Program Manager from PT provider

PE Program Manager identifies reference lab to Contractor

Field Team Leader sends splits to reference lab

Lab analyzes the PT samples and sends results to Contractor

Lab analyzes split samples and sends results to PE Program Manager

Contractor sends results to PE Program Manager

PE Program Manager sends split sample results to Contractor

AFCEC and Contractor evaluate results, determine impact on data usability, and identify corrective action if necessary

AFCEC generates report

End