EPA 325 FAQs

Q: What services do you offer in support of the Petroleum Refinery Sector Rule (RSR) Update concerning the new requirement for Passive Benzene Fenceline Monitoring?
A: Eurofins Air Toxics is currently providing Sampling Kits and EPA Method 325B analysis to the Refinery industry. To date we have analyzed more than 4000 EPA Method 325B samples in support of the RSR update. The analysis of Benzene is the primary requested service, but we are also providing certified analytical results for BTEX (and additional compounds) if needed.

Q: I am trying to decide whether to use the Refinery staff or an outside vendor for the Passive tube sample deployment and collection. Can you provide information on what is involved and any guides that are available?
A: Yes, Eurofins Air Toxics has developed several tools to assist the refineries in this process. The sampling kit has been developed to streamline the process by containing all necessary materials and equipment needed for sample deployment and collection. Within the Sampling Kit is a Step-by-Step guide describing this entire sample collection process. In addition to the guide we have produced a 12 minute detailed Sampling video which is available on our website. When requested, one of our experienced scientists can come to your facility to provide onsite training to your staff or responsible parties involved in the sample collection process.

Q: With the sampling period being 14 days, I am concerned that I won't get my results in time to address any potential problems that might arise. How long does it take the Laboratory to analyze and report the data?
A: The Laboratory's standard Turn-around-Time (TAT) is 5 business days from sample receipt. Once the 14 day period is complete, the samples are normally returned to the Laboratory via FedEx 2-day shipping. This means that you would have the data report in your hands 7 days after retrieving the samples, allowing for any needed review or investigations while the current sampling event is still active. Also, it is not uncommon for the Laboratory to provide the data in less than 5 business days. If expedited results are required, the Laboratory has been able to perform 24 hour TAT with prior notification.

Q: There seem to be several laboratories supporting the new EPA Method 325B, what makes Eurofins Air Toxics stand out from the competition?

A: Eurofins Air Toxics supported the early development and validation of EPA 325 initiated in 2012 by the EPA through Eastern Research Group. Additionally, our laboratory provided media and analysis in support of the API EPA 325 Pilot Study as the QA laboratory. Since the promulgation of the method, we have been supporting numerous pilot programs at refineries around the country in anticipation of the fenceline compliance requirement. Beyond the specific passive sorbent monitoring application, Eurofins Air Toxics has over 20 years of experience in the analysis of active sorbent tubes by TD/GC –MS following EPA Methods TO-1, TO-2 and TO-17.

The laboratory has primary NELAP accreditation for EPA 325B through Oregon Environmental Laboratory Accreditation Program (ORELAP) and secondary NELAP for the State of Washington Department of Ecology and also Secondary NELAP through the state of Louisiana. The laboratory has successfully completed a third-party EPA Method 325B Audit, and recently passed a 325B Proficiency Testing Round for BTEX on Carbopack X.

Eurofins Air Toxics has unmatched Thermal Desorption (TD) GC/MS capacity with a number of EPA 325B dedicated instruments and a fleet of additional TD-GC/MS units which can be configured to provide immediate redundancy and additional capacity.

Q: How long can the passive tubes be in service, and isn't there an expiration date for the tubes?

A: The final version of EPA Method 325 defines the service life of the passivated sorbent tubes as "two years or 50 uses, whichever comes first". The Laboratory electronically maintains the date the tube enters into service by scanning it into the laboratory's information management system using the unique barcode etched on the tube. This provides a complete history of each tube and allows the laboratory to monitor the number of times the tube is used for sample collection and how long the tube has been in use in order to insure the EPA 325 requirements are met. Before the tube reaches its service life date, it will be replaced at no cost to the client. The cleaned and certified sorbent tubes are stored with the long-term storage caps with the expiration date assigned 30 days after the conditioning date. The Laboratory's Chain of Custody (COC) lists the "Use by Date" for your convenience.

Q: How do I know that the passive tubes are not contributing to my benzene results? What is the cleaning/ certification process for the tubes?

A: As required by the method, all new tubes are conditioned and individually certified as clean by the laboratory prior to initial use, and all analyzed tubes are conditioned and batch certified prior to re-use. Conditioning is generally conducted on off-line thermal conditioning units, although tubes can also be conditioned on the analytical TD units in the "conditioning mode". The method requires that tubes are cleaned to less than 0.2 ppb (<0.64 ug/m3). The laboratory applies a cleanliness criterion of less than 0.12 ppb (<0.37 ug/m3).

Q: Are you able to reanalyze EPA 325 tube samples?

A: Yes, all of the EPA 325B instruments are are configured to re-collect the sample for archival, re-analysis, or dilution. The entire sample is thermally desorbed onto a secondary trap and a small portion of the sample is directed to the GC/MS for analysis while the majority of the sample is re-collected back onto the original sample tube. This allows for reanalysis of every field sample. Our procedure is to clean the sample after data has been reported, unless prior arrangements have been made to archive the sample for a specified timeframe.

Q: What is the impact to my results if the sorbent tubes are "mishandled" or damaged while in the field?
A: In response to industry and laboratory interest, Eurofins Air Toxics participated in a study in 2016 to investigate the impact of field handling protocols on benzene measurements. The results of this study indicate that is unlikely that minor mishandling will significantly impact the data. These results can be found on the Eurofins Air Toxics website. However, physical damage to the sorbent tube may prevent the Laboratory from performing the analysis. Overtightening the tube's storage caps by applying excessive torque can crimp the end of the tube resulting in its inability to pass the instrument's leak check. While it's important that the storage caps are leak tight, it is not necessary to apply excessive force on the wrenches. To determine whether the caps are sufficiently tight, grab the caps on both ends of the tube and pull forcefully. The caps should not come off.

If any unexpected or unusual event is observed at the station or an incident occurs during tube handling, documenting the information on the COC and communication with the laboratory can be critical to understand data and properly qualify results if appropriate.

Q: Can Eurofins Air Toxics provide any other supporting analyses to aid in the characterization of my facility or assist in a Corrective Action or Root Cause investigation?
A: As a full-service air specialty laboratory we have a range of methods available to provide additional monitoring resources. One of the challenges with fenceline monitoring is appropriately identifying on-site and off-site benzene sources for background concentration determination as well as root cause analysis when concentrations exceed the action level. Both sorbent-based and canister-based tools can be easily deployed for shorter-term sample collection and are described as follows:

Passive Sorbent collection via EPA 325B (1 to 14 days): Benzene measurements can be determined over periods from 1 to 14 days with reporting limits below the action level of 9 µg/m3. (Shortening the collection period raises the reporting limit proportionally.)

Active Sorbent Collection via EPA 325B: EPA 325B states that the sample tubes can be collected actively using a pump. Utilizing the same sorbent Carbopack X tube used for fence line monitoring, a volumetric syringe can quickly pull a grab sample for an instantaneous measurement. A syringe can be housed at the site and the tubes can be pulled from the extras included in each kit or with an overnight delivery from the laboratory. The samples are handled the same by the laboratory with analysis conducted by EPA 325B. With an analytical reporting limit of 5 ng, the volume required to reach the 9 µg/m3 benzene limit would be approximately 600 mL. A sampling pump can also be provided for an additional fee.

Canister Sample Collection via EPA TO-15: Evacuated canisters can be paired with a flow controller to collect time integrated samples over periods from 30 minutes to 24 hours. Alternatively, a filter can be connected to the canister inlet to collect an instantaneous, grab sample. The canister method allows for the measurement of a large suite of calibrated VOCs including benzene via TO-15. With our significant canister inventory, we can quickly deploy canisters to the site. The expected sample reporting limit for benzene using a 1 liter canister grab sample is 3.2 µg/m3.

Additional Chromatographic Fingerprinting: The laboratory can provide some additional detailed compositional information from the EPA 325 sample data which can be valuable in root cause analysis and source identification. While EPA 325 sorbent tubes measure benzene concentrations, the tubes also retain other chemicals in the environment which are indicated by peaks on instrument's output called the total ion chromatogram. Each peak can be tentatively identified by matching the mass spectral pattern of the peak to the NIST library of chemical spectra. The overall chromatographic pattern and the tentative identification of the uncalibrated chemicals coupled with refinery specific data on materials and processes near the monitoring station can be helpful in identifying the benzene source. Comparing the chromatographic patterns across the refinery and/or over a range of monitoring period can also be a useful tool.

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www.EurofinsUS.com/AirToxics

Eurofins Air Toxics
180 Blue Ravine Road, Suite B
Folsom, CA 95630
800-985-5955

Heidi Hayes
Technical Director
HeidiHayes@eurofinsUS.com
916-605-3341

Carl W. Skelley
National Air Product Manager
CarlSkelley@eurofinsUS.com
512-937-0519