

## What EPA Method 325 A/B Means For Oil Refineries



The following is an interview with Lee Marotta, Senior Field Application Scientist at PerkinElmer, Inc. Lee has more than 20 years of experience in the environmental field supporting water, soil, and air applications and is a long-time advisor to the EPA. As our PerkinElmer resident expert, Lee talks about the new benzene testing standards at the fenceline of North American refineries as required by Method 325 A/B.

**Q Can you provide some background on PerkinElmer's involvement with the EPA and Method 325?**

**A** Our relationship with the EPA dates back to the 1980s, when we first introduced thermal desorption. In 1991, PerkinElmer helped to develop the methodology used for Photochemical Assessment Monitoring Stations (PAMS) as well as for the Clean Air Act in 1992. Over the years, we have developed a strong working relationship with the EPA. In fact, the EPA used our TurboMatrix™ Automated Thermal Desorption (ATD) instrument to develop Method 325.

**Q How did you become involved in Method 325?**

**A** We offer technical support to all of our customers. As PerkinElmer's Senior Field Application Scientist, I and my team have been closely associated with the EPA as technical consultants on several applications, including Method 325 A/B since its inception.

**Q What exactly is Method 325 A/B?**

**A** Method 325 is an update to a federal regulation known as 40 CFR Parts 60 and 63, and is scheduled to take effect at the end of 2017. It requires oil refineries to monitor volatile organic compounds, or VOCs, at the fenceline of their facilities. Spaced at 20° intervals, the number of monitors needed by each refinery will depend on its size. The objective is to measure the emission of benzene to determine if there is a release of VOCs. Part "A" of the Method describes the field placement of the monitors, the passive adsorbent tubes that will collect the ambient air samples, and their sheltering requirements. It also details the 14-day sampling cycle along with specifics on tube cleaning and reconditioning. Part "B" describes how the samples will be analyzed in a lab using thermal desorption-gas chromatography.



**Contribution by:**

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**Q Why is the EPA requesting fence line monitoring of benzene at refineries?**

**A** The EPA is targeting benzene as the representative compound to evaluate the overall possible emissions of VOCs from refineries. Benzene is an inherent compound in crude oil. Crude oil is refined to make many products, including gasoline.

**Q What does the proposed monitoring system include?**

**A** The regulation calls for the placement of up to 24 sampling stations along the fence line of refineries. The sampling stations, or shelters, will contain passive sampling tubes packed with an adsorbent to trap ambient air samples. The samples will undergo testing every two weeks using Thermal Desorption-Gas Chromatography/Mass Spectrometry (TD-GC/MS) technology. In the case of the EPA, they used PerkinElmer's TurboMatrix ATD instrument for its tests.

**Q Are these monitoring systems susceptible to benzene readings from sources outside of the refineries?**

**A** Yes, there are a number of factors that could trigger a benzene reading. These might include its location near a major highway or gas station. Even someone smoking near one of the monitors could produce a signal for benzene. Environmental conditions can also affect the response.

**Q Can PerkinElmer help refineries determine if the benzene readings are coming from an outside source?**

**A** Absolutely. As part of our One-Stop Solution, we take a proactive approach in helping to prevent readings from other sources of benzene or to recognize where they may be coming from. We also have proprietary remedial action plans in place to help identify other sources of benzene and track their source, whether they originate from within the refinery or are the result of an outside source.

**Q What is the difference between a passive and active sampling process?**

**A** Active sampling requires a pump and can use multi-bed adsorbents for a wide boiling point target range determination. It is easier to determine volume sampled onto the tube. Passive sampling is excellent for long-term sampling. It does not require a pump, and a single adsorbent has a limited component range compared to active sampling. Uptake rates are adsorbent and component dependent, which is why we use the adsorbent with uptake rates calculated by the EPA to ensure correct sample volume for accurate results.

**Q Who will perform these tests?**

**A** Many refineries already have the capability to conduct their own VOC sampling, but this type of testing is new for them, and we have the experience to help. Some of the petroleum producers initially may source the testing to outside services. Most refineries, however, will likely seek help in both the sampling and analysis areas, so we look forward to collaborating with all of these facilities to deliver cost-effective solutions.

**Q Does anyone offer a complete Method 325A/B solution?**

**A** PerkinElmer is a manufacturer of a complete Method 325 solution as well as being a globally respected service and support provider that is ready to help refineries meet these new requirements right now. We not only have a distinguished history in air monitoring, we literally invented automated thermal desorption technology. That is one of the reasons why the EPA used our instrumentation in the development of Method 325. Our complete solution includes sample shelters, passive sorbent tubes, our award winning TurboMatrix ATD and Clarus® SQ 8 GC/MS, as well as installation, system, and application training, as well as support. We are the one-stop-solution for Method 325A/B monitoring.