



Customer Story

PerkinElmer and Enthalpy Analytical, Inc.

A Collaboration Built On Mutual Respect

Introduction

Founded in Durham, NC, in 1993, Enthalpy Analytical, Inc. is a project-oriented analytical lab providing services in emissions measurement, ambient air quality monitoring, and tobacco and smoke analysis. Over the past two decades, Enthalpy has earned a national reputation for its expertise in generating accurate, high-quality data to help industry and governments manage air emissions. As one of the country's leading air-quality analytical labs, Enthalpy has also conducted a variety of air quality tests for the Environmental Protection Agency (EPA) and the National Council for Air and Stream Improvement, Inc. (NCASI) as well as a large list of private sector customers. In 2015, Enthalpy became part of the environmental laboratory services division of Montrose Environmental Group and expanded its analytical service offerings beyond air emissions to include waste water, drinking water, aquatic toxicity, soil, microbiology and radiochemistry. Enthalpy also maintains labs in Orange, CA, Berkeley, CA, and Henrico, VA.

EPA Method 325 A/B

Enthalpy first reached out to PerkinElmer in 2012 thanks to a recommendation from the EPA's Office of Research and Development, National Risk Management Research Laboratory, which is also located in Durham. "We knew about the EPA's plans to require passive fenceline monitoring at all U.S. refineries in 2012," David Berkowitz, Enthalpy's Director of Business Development, says. As mandated by the Clean Air Act, the EPA is required to review emission standards periodically for new sources of air pollutants, volatile organic compounds (VOCs), and other pollutants. "Since we have extensive experience in air quality monitoring, we were interested in becoming involved in the project, and we were also recommended by several sources to the EPA."

Those recommendations resulted in the EPA inviting Enthalpy to participate as a primary lab in the second phase of a round-robin study. The study focused on method validation of new laboratory testing procedures to monitor fugitive emissions of benzene and other hazardous air pollutants at the fenceline of all U.S. refineries. Officially known as Method 325 A/B (Part A is field collection techniques and Part B details the laboratory analysis procedures), the monitoring requirements were finalized in September 2015 and are scheduled to take effect in the beginning of 2018.

The Gold Standard for Thermal Desorption

In accepting the EPA's original round-robin offer, Berkowitz says that Enthalpy decided to validate the EPA's first-round findings using the same techniques and instrumentation as the EPA, including PerkinElmer's TurboMatrix™ Automated Thermal Desorber (ATD) technology. In addition, when asked why Enthalpy selected the PerkinElmer ATD, Berkowitz had a quick response: "because it is the benchmark," he says.

ATD is a concentration technique and an excellent tool for environmental air analysis following EPA Methods TO-17 and 325.

PerkinElmer and the EPA: An Historic Relationship

"Our EPA relationship dates back to 1992, when the EPA acquired its first PerkinElmer Thermal Desorber (TD)," Lee Marotta, Senior Application Engineer at PerkinElmer, says. "Since then, the EPA has standardized many of its air applications using the PerkinElmer TurboMatrix™ ATD," she says, adding that it is now widely considered the industry gold standard in thermal desorption.

Indeed the "gold standard" led Enthalpy to reach out to PerkinElmer's Marotta, who consulted with the EPA on Method 325. Berkowitz says, "Lee helped us with set up and continues to provide us with optimization and troubleshooting. It is a comfort to know we can turn to Lee and John-Michael Marquardt, our

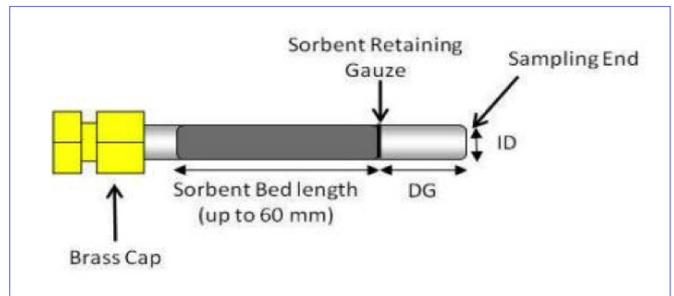


Figure 1. Cross Section View of Passive Sorbent Tube.

service engineer, for expertise and help." The TurboMatrix ATD has been used throughout the EPA's Method 325 round-robin exercise as well as analyzing customer samples. Enthalpy has since added three more of the instruments to its labs.

A Growing Collaboration

Based on the EPA's Residual Risk and Technology Review (RTR), the new Method 325 A/B, which Enthalpy helped to validate, requires all U.S.-based refineries to install passive air monitoring stations around the perimeter of their facilities, using either an angular or linear footage approach. The number of stations depends upon the size of the refinery.

"Each of these shelters will contain passive air-sampling diffusive tubes that are specially treated and filled with a specific adsorbent that can retain and release up to 44 of the common toxic VOCs. Benzene is the compound that must be reported," says Marotta, who helped to develop their cold-trap design for the EPA study.

According to the new Method 325 regulations, refineries need to change the tubes every 14 days. A lab will test the passive sampler tubes for fugitive emissions using the ATD technique to extract the volatile organic compounds (VOCs). Gas chromatography/mass spectrometry (GC/MS) will then separate, identify, and analyze the targeted VOCs. The ongoing tests will monitor the fenceline to determine the amount of VOCs that may be entering a community, based upon the amount of benzene.

A Focus on Helping the Petroleum Industry

Now that the EPA has finalized its Method 325 guidance, both PerkinElmer and Enthalpy are turning their considerable air-monitoring expertise and experience toward helping the petroleum industry meet the new standards.

"We are currently assisting refineries and helping them evaluate their standing so they can be better prepared for the fenceline monitoring requirement in the new rule" Berkowitz says. "

PerkinElmer's Marotta agrees. "Enthalpy worked closely with the EPA on Method 325," she says. "The lab is not only Method 325B accredited by the National Environmental Laboratory Association, it was also involved in its developmental, field, and pilot studies... not to mention that it has such an experienced professional as David serving as its Method 325 point person."

That sense of professional respect is mutual. "Our collaboration with Enthalpy continues to grow," Marotta says. "We are working with Enthalpy to ensure that our TurboMatrix™ ATD technology provides the company with the kind of accurate, reliable analytical results that has made it a leader in the emissions testing industry."

In addition to leveraging PerkinElmer's global leadership in Automated Thermal Desorption, Marotta says that the company is also proactively reaching out to refineries and laboratories with a unique turnkey solution to Method 325 A/B. "No one else in the industry has it," she says, "and we are fortunate to have worked with many excellent scientists at the EPA. If the petroleum industry wants to be in compliance with the new Method 325 A/B, there is no better place to start than with PerkinElmer."

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