# Successful Replacement of the TEA by the Agilent 255 NCD for Nitrosamines Analysis

Technical Overview

## Introduction

Nitrosamines are known carcinogens. These compounds may appear in cured and fried meats, tobacco, rubber products, cosmetics, consumer products, pharmaceuticals, and environmental matrices. Gas chromatography combined with selective detection has been a mainstay technique for analysis of nitrosamines.

### Problem

A major supplier of cGMP analytical services with expertise in nitrosamines analysis was experiencing problems maintaining aging Thermal Energy Analyzers (TEAs). To reduce repair expenses and improve reliability, the company sought an alternative to the TEA.

### Solution

The analytical services company sent samples to the application laboratory for a demonstration. The demonstration provided encouraging results and, based on these results, the company purchased two Agilent 255 Nitrogen Chemiluminescence Detectors (NCDs) for nitrosamines analysis. The company has since completed extensive bridging studies, the results of which allowed them to retire aging TEAs.

Not only have the Agilent NCDs proved to be more reliable, they have yielded higher resolution and faster runtimes (using 0.53 mm id column conditions similar to those described in Agilent Publication 5989-6773EN: Nitrosamine Analysis by Gas Chromatography and Agilent NCD). This is illustrated in Figure 1 (left is TEA results; right is NCD results). The bridging study demonstrated essentially equivalent results, although slightly higher recoveries were obtained by the NCDs. It was found that use of the CTR traps with both detection systems leads to more stable baselines, and required replacement after approximately 50 analyses. Further, the more stable baseline of the Agilent NCD yielded easier peak integration.

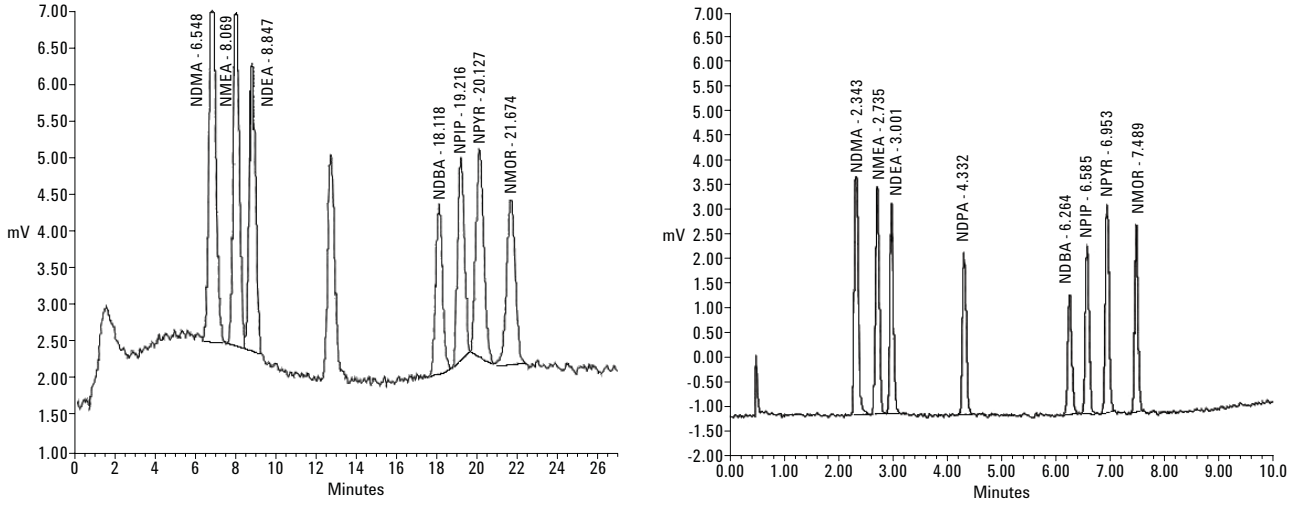


**Figure 1. Comparison of TEA (left) with NCD (right) for a reference material that contained nominally 100 ng/mL of nitrosamines. Note the run time for the TEA is 27 minutes while the run time for the NCD is 10 minutes.**

## For More Information

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