Ammonia and TKN Testing: Advanced Chemistry & Troubleshooting in Automated Workflows

Presenter Information

Presenter: Rachel Timmerman
Title: Product & Applications Strategy Manager
Email: rtimmerman@estanalytical.com

Abstract

Maintaining high-accuracy data for Ammonia and Total Kjeldahl Nitrogen (TKN) remains one of the most resource-intensive challenges in modern analytical testing. Whether managing regulatory environmental compliance, characterizing agricultural soil and fertilizer profiles, or monitoring industrial process water, laboratories across sectors face a critical turning point. Complex sample matrices, erratic spike recoveries, and the looming hardware expiration of legacy automated testing systems continue to threaten laboratory productivity.

Join our industry and application experts for a technical session explicitly designed to broaden your understanding of modern nitrogen testing and provide actionable strategies to increase your laboratory's daily output. In this briefing, we go beyond basic troubleshooting to examine how strategic, automated lab processes—including modern continuous flow and discrete analysis—optimize complex workflows and stabilize daily testing. We will evaluate the fundamental mechanics of automated determination of Ammonia and TKN, explore best practices for consistent sample preparation across diverse matrices, and share proven methodologies to neutralize common chemical interferences.

Whether you are an existing customer looking to maximize your current instrumentation or a laboratory director evaluating modern alternatives to secure your future capacity, this presentation delivers the precise application expertise and strategic product perspectives required to expand your team's technical knowledge and scale your productivity without operational downtime.

Webinar Outline

I. Cross-Industry Nitrogen Testing Dynamics

- The Diverse Bench: Navigating testing protocols across environmental regulatory landscapes, agricultural soil/fertilizer frameworks, and industrial QA/QC standards.

- The Workflow Lifecycle: Evaluating how changing laboratory resources and the transition away from legacy automated testing platforms impact daily operational output.

II. Optimizing the Ammonia Workflow: Multi-Matrix Chemistry & Interference Control

- Methodology Evaluation: A comparative review of automated Phenate and Salicylate based testing, with and without Gas-Diffusion techniques under high-throughput conditions.
- Conquering Complex Matrices: How modern automated instrumentation handles severe sample interferences—from high-salinity process lines to dense agricultural extracts—without manual pre-treatment.
- Preventing Calibration Drift: Practical chemical and physical strategies to stabilize baselines, reduce interferences & precipitation, and eliminate costly sample re-runs.

III. Streamlining the TKN Bottleneck: Digestion to Determination

- Precision Sample Preparation: Best practices for managing block digestion variables and thermodynamics to protect sample integrity and prevent volatile nitrogen loss.
- Maximizing Batch Efficiency: Evaluating catalyst options and digestion chemistries to ensure test efficiency and accuracy across diverse sample types (soils, feeds, water, and process waste).
- Strategic Workflow Alternatives: A realistic regulatory and technical look at where automated Total Nitrogen (TN) can optimize testing speeds, and where traditional TKN automation remains necessary.

IV. Securing Data Continuity & Evaluating Upgrades

- Platform Selection Matrix: Aligning your laboratory's specific sample matrix and throughput requirements with the architectural advantages of modern Discrete Analyzers vs. Continuous Flow Analysis (CFA/FIA).
- Risk-Free Migration: A practical blueprint for transferring existing SOPs and calibration profiles to current instrumentation with minimal operational downtime.

V. Interactive Technical Q&A

- Open forum with our industry and application experts to troubleshoot specific sample matrix challenges and workflow bottlenecks.