Agilent Case Study: The Chemours Company

Ensuring Quality Laboratory Results in the Face of an Evolving Workforce

Agilent OpenLab

The Challenge: Maximizing Efficiency with Less Resources

Many analytical laboratories are tasked with the challenge of having to complete a large number of analyses on a fast timeline with lean staffs. These challenges were recently magnified at The Chemours Company (maker of titanium technologies and the fluoro products), where staff reduction incentives encouraged one-third of the most tenured and experienced analysts to retire from the Deepwater, NJ, quality control lab.

The laboratory knew it would take months to hire and train new staff members, and even longer for them to develop the know-how to recognize and prevent potential problems. As a client-facing business with 30% of its sample load being quality control standards, the team also knew it must continue to deliver quality, accurate data on time during this transition period.

The team could not afford to simply sit back and hope mistakes would not occur. According to Keith Wilkins, PhD, a lead analytical chemist in the quality control lab at Chemours, "When an error is made in a batch, or a batch of product is delayed, it's going to be at a minimum cost of tens of thousands of dollars. If you give bad results to a customer, it could be millions."

Mistakenly labeling a batch as "bad" when it was in fact good (a false negative result), can result in time-consuming additional processing; making a new batch of a product can take an additional 12–14 hours than necessary, add $50,000–$100,000 in material costs, depending on the product. Far worse, taking the time to troubleshoot and identify the problem in the plant could result in shortages leading to lost sales and revenue. A loss of confidence in the analytical laboratory may also affect operations in the future. False positive results (i.e.,a product released that does not meet specs) could create even worse situations like regulatory failure or product recalls. The potential ramifications of delivering false negative or false positive results extend beyond financial; it could lead to a loss of confidence among the quality control laboratory, the production plant, and end-users, which could affect the larger business operation as a whole.

Therefore, the Deepwater laboratory team had to find a way to incorporate new technicians seamlessly into its analytical quality processes, fill the knowledge gap, and support less-experienced technicians all while continuing to deliver consistent, high-quality results.

"The Intelligent reports are a very important piece of [helping us not send out a result, or not produce a result that causes the plant to delay a batch]…."

Keith Wilkins, PhD
Lead analytical chemist
Chemours

Benefits Realized

- Reduced learning curve for several new lab analysts replacing long-time employees
- Continued high-quality results minimizing delays or quality issues
- Intelligent flagging of results for focused attention and rapid lab response
- Consistent, predictable software costs for improved planning and budgeting
- Ability to customize reports by products and propagate reports globally with ease

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The Solution: Migrating to OpenLab CDS with Advanced Reporting

The Chemours's quality control lab decided to leverage the benefits of Agilent's OpenLab CDS.

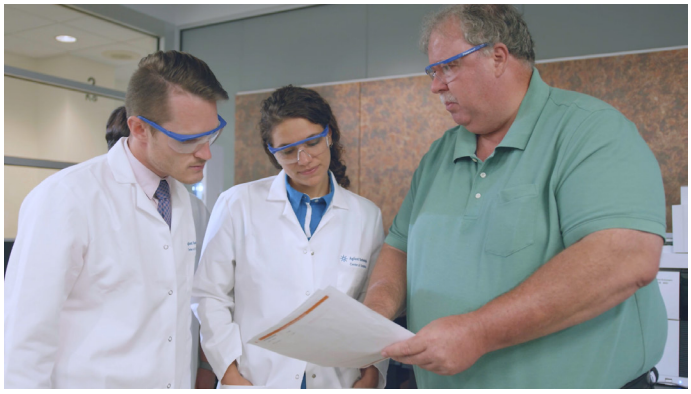
Better onboarding. When the laboratory started migrating from their current software, OpenLab ChemStation Edition to OpenLab CDS, they dealt with a learning curve at each step of the transition. Wilkins added a trainee role in the software to allow operators to practice operating its chromatography systems with the newest software available. "As they become more experienced with running it, then we give them more access to things like adjusting retention times, and looking at the integration parameters if necessary," he explains.

This flexibility allows the facility to take advantage of new versions of software—something that Wilkins strongly favors—without the risk of unprepared laboratory technicians potentially sending a bad batch into the plant.

Predictable costs. Because the laboratory uses OpenLab with Agilent's subscription service, SubscribeNet, Wilkins sees two-fold benefits: costs are more predictable, and systems are safe from problems that arise when labs operate on outdated software. He states, "If you're not staying current, with both your instrumentation and software, eventually you're going to get so far behind that the leap is like a cliff—it just keeps getting higher, and higher, and higher."

Faster, more confident decisions. Wilkins says the quality control laboratory needed new tools to support the accuracy of their new and growing team of less-experienced technicians. Some of the group's chromatograms have more than 100 peaks, and it can be difficult to know which 4–6 are really important (and which one or two of those to focus on), for instance.

"An experienced technician might recognize [potential red flags in the analyses] right away, but someone brand new in a role may not," says Wilkins, who says that the team strategically takes advantage of several OpenLab CDS tools such as advanced reporting for this purpose.



Wilkins introduced smart logic into the reports to give technicians tools to help them recognize potential problem areas in the data collected with color-coded warnings. "We built calculations directly into the report itself. And with smart logic, we can pass messages to the laboratory technicians, flagging certain values (e.g., size of a peak or the retention time) that might be abnormal," he states. "We try to proactively address these issues so that we're not sending erroneous results to the plant."

Building calculations into the report has had another benefit: helping move the team away from spreadsheet macros that were labor intensive to create and update, especially across multiple sites. "[Spreadsheet macros] limits how far you can propagate something you create because you're limited by who's going to support the code," he states. Conversely with advanced reporting, Wilkins can replicate his efforts easily across eight Chemours labs around the world.

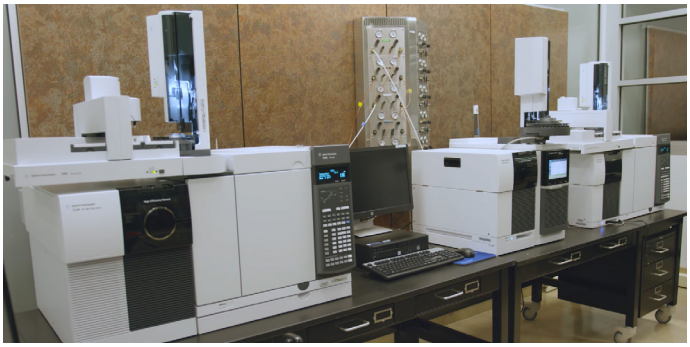
The flexibility to adjust reports with these types of custom calculations and alerts is unique to the intelligent reporting solution. "Until intelligent reporting came along, you really didn't have much of an ability to adjust the reports. You could do some minor things, but not to this level," he states.

Access network of trusted experts for support. Throughout implementing new solutions, Wilkins says his team benefited from support from Agilent's team of knowledgeable experts, which has saved time in troubleshooting issues. "We get a very fast response when we have an instrument issue. I feel like I don't have to know everything. If it's something I can figure out quickly, I will. If I'm struggling with it, I know that Agilent has experts," he states.

The Result: Supporting and Accelerating the Learning Curve Builds Trust Ensuring Product Quality

The Chemours team felt their use of the Agilent technology solutions directly led to the laboratory's ability to continue its focus on quality and minimize time-consuming and expensive delays and errors. "Our productivity is staying very high through this transition, as we move new people in," he states.

He adds that upholding this high level of excellence helped maintain strong trust between the quality control laboratory and the production plant. "When our lab gives the plant a bad result, they remember forever. So, the trust issue is a continual effort. The Intelligent Reports are a very important piece of [helping us not send out a result, or not produce a result that causes the plant to delay a batch] …when you focus on the quality, the trust comes naturally."



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From a return-on-investment perspective, Wilkins feels the key benefits of the upgrade to OpenLab CDS with advanced reporting at Chemours included:

- Accelerated learning curve for new technicians, who now get help identifying values that are abnormal with color-coded reports.
- Maintaining high productivity as additional technicians are added to the laboratory.
- Keeping software costs consistent and predictable with SubscribeNet and taking advantage of new versions as they become available.
- Easier training of new technicians on new software releases.
- Higher value reporting with built-in calculation tools that can be propagated to multiple laboratories throughout Chemours's operations, thus saving the effort to reinvent quality measures normally requires by spreadsheet macros.
- Ability to respond to ever-evolving quality control and client needs.

Ultimately, Agilent OpenLab CDS with advanced reporting through SubscribeNet have helped Chemours navigate a challenging time of changes in its laboratory and better prepare for its new fast-paced environment. The quality control laboratory successfully minimized expensive plant delays caused by incorrect analysis of good batches or letting bad batches proceed, and even improved upon its already high standards. "We have fewer quality incidents than we did several years ago. When we have a quality issue, we investigate and we may go back to modify the reports," states Wilkins.

Watch the video series

Part 1: Why staying current with technology in the lab is vital for your business
www.agilent.com/en/video/openlab-cds-case-study-chemours-part1

Part 2: How OpenLab CDS reporting keeps productivity and quality high with an evolving workforce
www.agilent.com/en/video/openlab-cds-case-study-chemours-part2

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