PROFICIENCY TESTING BOOSTS LAB PERFORMANCE

Labs gain from proficiency testing insights.

Wherever testing plays an important role in an industry, PTP – Proficiency Testing Programs – also play an important role.

Do you need to check the strength of a yarn for an automobile seat? Monitor petroleum quality as it flows through the supply chain? Are you wondering whether a batch of metal powder can be used to 3D print a particular widget?

For these questions and more, PTP participation will help labs gather relevant information and understand the answers.

PTP are accredited statistical quality assurance programs from ASTM International that give you and your lab the ability to "compare, improve, and expand your laboratory's performance." And with guidance and input from ASTM International technical committees (and a boost from the new PTP 2.0), the program is now stronger than ever.

The Program

Sign up, test, send results, get reports. Repeat (two, three, or more times a year).

When you sign up for a specific PTP, your lab receives a homogeneous sample material(s) on a predetermined schedule, depending on the program test cycle frequency. The material in question is similar to what a lab would typically test and the tests that the lab would regularly run.

Along with the material come instructions and the test methods to use.

Then, the labs submit their test results for the current cycle electronically to ASTM through the PTP portal. ASTM compiles and checks the data, then issues statistical summary reports, coded so that the labs are not identified. These reports contain:

- All participants' test results;
- Statistical analysis of test data; and
- Charts and graphs plotting test results versus the lab code.

The PTP Web-Based Portal

ASTM's PTP portal (referred to as PTP 2.0 after its recent upgrade) serves as the participants' online gateway to their programs.

In addition to general instructions and fees, the portal provides details about specific program test cycles such as shipping dates, result due dates, and when the final report should be published.

With PTP 2.0, the data arrive more quickly than before, according to Chris McCullough, director of technical governance at Bureau Veritas, and a member of the committee on petroleum products, liquid fuels, and lubricants (D02). That's important because "data is perishable," he says.

McCullough notes, "If you let too much time elapse between when the test is performed and when you find out how well the test was done, the data is less beneficial." With the faster turnaround time for reports, it's a competitive advantage for labs that are part of the program.

There's another advantage of the PTP data, he adds, "This is a benefit that not everybody might not be aware of: the ability to download the data into an XML file. This is extremely useful for labs that want to slice and dice the data even further. Not many other providers offer this."

For his lab, that means being able to identify bias and trends at very specific levels. "That's very useful to a lab," he says, referring to the importance of understanding where the process may need attention or where instruments may need calibration or maintenance.

Additional PTP Advantages

As well as providing the testing data that forms the lifeblood of a lab, ASTM's PTP affords its participants other advantages as well.

Labs often need to take part in programs like PTP to be accredited — and to do so on an ongoing basis to maintain that accreditation.

For the return on the investment, "ASTM's PTP program is a very low-cost program to gain a great deal of information," says Stuart Smith, a consultant and ASTM member. He is also sub chair of PTP in the committee on aromatic, industrial, specialty, and related chemicals (D16).

At the most basic level, according to McCullough, ASTM's PTP program holds this advantage: "You're comparing your lab's performance against that specific precision statement as opposed to something that's generic." That apples-to-apples comparison means that ASTM connects the data to a specific method and precision statement. "ASTM does a very good job in parsing their data to make sure that statistics are representative of a specific test method," McCullough says.

"With PTP, you can assess your lab performance so that you have confidence that your numbers are real, and you can be sure you're right there in the mix with your peers," says Fred Boldt, a consultant and technical reviewer for plastics proficiency testing.

For Scott Fenwick, technical director at the National Biodiesel Board, the PTP advantage is about providing the best and most accurate information to your customers because it's a competitive marketplace.

"When you're producing a batch of fuel and generating a certificate of analysis, you can use the PTP reports, share them with your customers, and say: 'Here's how well you can trust the data that we're generating,'" Fenwick says. "You can trust the certificate of analysis: 'Here's how well I performed against the industry.'"

Fenwick adds, "For me as a trade association — the National Biodiesel Board [NBB] — I use it to go back to my members to say: 'Here's how well we performed as an industry over the last four months or six months.'"

Recently, the NBB compiled two years' worth of biodiesel quality data for several groups, and PTP reports were part of the reported information. The bottom line in this case, Fenwick notes: "Biodiesel is a fuel component that you can trust."

For plastics, the ASTM program covers a wide range of characterization procedures, including elemental analysis and thermal properties in addition to a wide range of mechanical tests for raw materials and finished goods such as films. "Any plastic part, from appliance housings to bottles and bottle caps, has some requirements for mechanical properties," says Boldt. "These need to be balanced, measured, and controlled to meet end-use requirements."

"PTP covers the whole plastics chain from start to finish," he says.

Outliers Help Too

The information coming from a PTP cycle provides information about what went wrong as well as what went right.

Like constructive criticism, outliers discovered by PTP participation offer the opportunity for improvement by looking more closely at possible causes:

- Are calibrations accurate?
- Is the technician performing the method properly?
- What additional controls might be necessary?
- Statistical quality control, preventative maintenance?

With individual programs, the committee works to determine the cause of the problems. Smith explains, "Sometimes we need to revise the test method to correct problems. Sometimes labs

are having problems they were not aware of." Calculation or instrument problems can be uncovered and then addressed.

A Dynamic Program

ASTM International's PTP is about more than the testing itself and the resulting reports. It's also about the connection between PTP and the committee responsible for the standard test methods.

As Boldt puts it, "If there is a wide range of results, is that inconsistent lab testing or the test itself?" Because each program has a sponsoring committee, and technical reviewers examine the report information, errors and inconsistencies can often be pinpointed.

For the petroleum committee, subcommittees are encouraged to review the reports and provide feedback to members so that any improvements to existing test methods or evaluation of new methods can be made. For example, PTP staff responded to the committee's request for data and created a report that allows committee members to view a method across multiple programs. This approach will help committees monitor how well labs perform the method on different products.

The information flow also goes from the committee to PTP. "When a standard gets updated, the program gets updated too," says McCullough. "Not only for test methods, but for updates to specifications as well. That is very beneficial."

And with the responsiveness of ASTM staff, the programs can be continuously improved. "Another thing that sets ASTM apart from other PTP providers is their willingness to adapt their programs to changing industry needs," McCullough adds. "ASTM is very customer-oriented in that regard."

Boldt agrees. "They are living programs, and we can change them if need be."

PTP Continues

Amy Meacock, ASTM's PTP director, welcomes suggestions for new programs and considers recommendations regularly. When possible, she says, "We initiate at least one or two programs each year." However, she cautions that available material and enough participation to make a program valid are both needed to provide this value to an industry.

One of the newest additions to PTP, sponsored by the petroleum committee, uses liquefied petroleum gas (LPG). About six standards are used in each test cycle, which will be run twice this year and increase to three cycles next year, for attributes such as composition, sulfur, and contaminants.

Overall, as Scott Fenwick says: "The PTP program alone is worth more than the cost of membership for an entire industry, even though you have to pay to participate."

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