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Time is Money: The Hidden Cost of Inefficient Laboratory Practices

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Manual inventory management practices make it rather cumbersome for scientists to carry out daily responsibilities. Firstly, scientists need to perform the laborious and time-consuming process of manually entering inventory records, sometimes mid-experiment. Scientists face reagent-related obstacles without streamlined or digital inventory management. As lab staff uses them, common reagents may get lost.

Without an inventory system, it's hard to find reagents or get a stock overview. Multiple bottles are opened at once, causing waste and mismanagement. 60% of the scientists we surveyed said they have an inventory management tool, but 90% struggle to find consumables. Laboratory managers and R&D leaders who aren't familiar with scientists' daily challenges notice that workflows take longer than expected but rarely suspect inventory mismanagement. Despite having an inventory system, their monthly checks reveal expired reagents or a sudden reagent shortage. They are unaware that the system is unreliable and inconvenient to use. To perform root-cause analyses, they spend more time and resources combing through error-prone manual data interventions but instead discover data silos or graves with irretrievable information.

Motion waste: When information is all over the place

Motion waste may seem rather innocuous, but in closer analysis, it often results in a two-pronged attack on the laboratory's overall research output:

- The unreasonable costs of having highly trained scientists performing low-value tasks every day.
- The lost value to the research project as capable laboratory personnel are obligated to prioritize mundane inventory management over high-value contributions.

Longer time-to-market could cost the pharmaceutical industry competitive advantage. In contract research organizations (CROs), motion waste can slow project turnarounds. A report by the EU Commission estimates that improper data management in research costs the European economy €10.2 billion annually. The report recommends research data be FAIR: findable, accessible, interoperable, and reusable. Without a reliable system, annual stock reviews or audits are difficult.

During data intervention by a regulatory authority or laboratory manager, recapturing old data records into preferred formats takes time. Frequent data cleaning causes motion waste as scientists pause research to organize inventory records. Inconsistent data entry and poor data governance in a lab can increase motion waste as team members decipher each other's records. In a recent case study, pharmaceutical company researchers spent up to 50 minutes finding a sample. Unproductive time across thousands of employees can hurt a company's performance.

To reduce motion waste, R&D leaders must investigate why their scientists spend time on mundane inventory tracking. Also, Ineffective lab practices can lead to lower professional satisfaction, underperformance, or employee turnover.

Spoilage waste: When expired reagents need to be tossed

Most lab managers have discarded expired reagents, sometimes before using them. 52% of researchers discard unused or expired stock. Disorganized inventory records make predicting lab reagent usage difficult. So lab managers overstock. As a result, they miss opportunities to plan experiments to use reagents before they expire. Lack of a reliable system to monitor

real-time inventory stock leads to spoilage waste that drains laboratory budgets. The true cost of spoilage includes shipping, maintenance, storage, and safe disposal. When ignored, these hidden numbers can burden the lab financially. Improper storage can cause spoilage. When reagents aren't discarded promptly, they can be mistakenly used in research projects. Out-of-date reagents invalidate research findings because they don't work properly. Using expired cell culture media or antibodies yields unreliable data. Even with early intervention, repeated experiments will exhaust time and resources. Failing to notice or act on expired reagent usage can compromise data integrity for current and downstream experiments, rendering results unusable. Behind every expired reagent wrongfully used due to inventory tracking issues is a large stockpile of time, money, and resources already spent on the research project that could be wasted due to noncompliance or irreproducibility. Both factors are integral to early drug discovery labs and CROs, exposing financially-vulnerable projects to more costs and putting company's reputation and future at risk.

Disorganized Inventory Management Increases the Risk of Non-Compliance

Highly regulated lab environments have a particular concern to maintain reagents and stocks reliably. In controlled protocols within regulated labs, using expired, improperly stored, or vaguely documented materials can result in the rejection of all associated results to stay in compliance. The loss of time and resources, connected to isolating, tracking, and eliminating reagents and data that could be associated with procedural non-compliance may be substantial. Regular audits are commonplace in pharmaceutical and drug discovery laboratories. Regulatory bodies such as the U.S. Food and Drug Administration and European Medicines Agency expect time-stamped, user-identified information on each consumable in the laboratory. In preparation for an audit, team members can spend significant time tracking down and manually double-checking documents. Without organized inventory records or reliable consumable tracking, laboratories must cross their fingers during audits, in case any violations are uncovered.

Better Inventory Practices Can Save Time, Reduce Costs and Improve Research & Production Outcomes

The direct and indirect costs of manual, error-prone inventory management can take a huge toll on the company's output and industry standing. As the scientific and pharmaceutical community embraces a digital revolution, laying the foundation of best practices with efficient, user-friendly digital inventory systems not only boosts productivity but also generates tangible financial gains. Forward-thinking laboratories that replace repetitive admin tasks with suitable digital platforms can maintain compliance, retain scientific talent, expedite research timelines, and, ultimately, attract bigger funders.
LANEXO® Inventory Manager is an offering from Merck's growing portfolio of digital laboratory productivity initiatives – it lets you automatically track the chemicals you have in stock, see where they're stored, and tell at a glance if they've been opened or if they've expired.

Comprised of a mobile app and RFID labels, the LANEXO® mobile app captures data from lab consumables with just a few taps on your device and stores the information in a secure cloud. You can access detailed, real-time inventory data – including SDS, owner, opening and expiry dates, location, usage and disposal information – anytime, anywhere.

This way, LANEXO® application not only simplifies your stock management across multiple sites, but it also ensures full regulatory compliance, such as with FDA regulation 21 CFR Part 11.

It's time to say goodbye to Excel, pen and paper.
Discover the fast track to an audit-ready lab.

C&EN BrandLab report sponsored by Millipore Sigma. Chemical Waste: The true cost of inefficient inventory management, June 2021: https://connect.acspubs.org/ lanexo-chemical-waste-report?partnerref=CENmilliporesig malanexo