

Emerging Quality Considerations Across the Global Life Sciences Supply Chain

New waves of innovation in Life Sciences, and a redoubled effort by regulators around the world to maintain the highest standards of safety, are placing increased pressure on drug and device manufacturers to assure the consistent standards of their manufacturing processes, systems and supply-chain partnerships. During 2022, a number of important trends emerged or deepened, which are having a significant impact on the sector – ranging from practical supply chain issues to medicinal/device innovation. 2023 is set to be another milestone year, with more regulatory changes afoot linked to process digitalisation and automation. REPHINE's Dr. Eduard Cayón sets out the key Quality considerations global LS manufacturers need to be on top of.

If ever the Life Sciences industry needed a robust manufacturing and supply chain Quality backbone, it is now. The reinvention of medicine continues apace, global supply chains are being restructured, and regulators are extending their controls over critical processes in digitalised and automated form.

Change and the need for consistency, fluidity and predictability mean that manufacturers need reliable controls and proof of their attention to detail. Even as they go deeper with digital transformation, they must consider the IT systems and automation tools they are harnessing, designing in quality from the outset and ensuring that everything is validated and will stand up to the scrutiny of an audit inspection.

There's a lot to unpack, but success starts with awareness and a plan.

Disruption is Everywhere

As a result of the pandemic, and further aggravated by the war situation in Europe, the problem of shortages of some medicines persisted in 2022. The continued/repeat closure of China and the difficulties in the supply of raw materials presented a major problem, forcing pharma companies to rethink their reliance on far-flung markets

for APIs and other raw materials. To ensure supply security, manufacturers have had to review their sourcing options and, in many cases, opt for alternatives closer to home – despite the associated expense. This activity continues, and with it the need to review the quality performance and compliance records of new suppliers or alternative manufacturing sites in Europe or North America.

At a more strategic level, we're seeing a whole raft of innovation and new medicines focused on macromolecules from biotech processes, or adaptation of existing medicines through the addition of medical devices and/or app-based digital controls and data exchanges. As the regulatory environment strives to adapt its quality and safety requirements, parameters for compliance are becoming stricter and more all-encompassing, putting pressure on manufacturers to keep updating their controls and monitoring more of their activity. We are seeing new harmonised standards and guidelines being published all the time, whose changes are based on the need for better scientific and technical knowledge of the processes, as well as risk-based management.

Fostering Safe Innovation Through GxP Rigour

Developed markets such as Europe and North America are already well used to strict controls and audits, but standards are being raised right around the world now – from South America to the Middle East and Asia. The upshot is that manufacturers must be able to vouch for every aspect of the product manufacture and delivery lifecycle, wherever the different touchpoints are, with GxP standards (recognised good manufacturing/distribution practices) as their framework and guide.

Keeping on top of all of the requirements, and maximising opportunities, requires that Life Sciences companies are agile – both in resolving immediate problems and adapting to changes that arise as the regulatory environment continues to evolve and modernise. Having access to specialist capabilities is becoming essential, if companies are to be confident of leaving no gaps in their level of GMP compliance.

Lessons from the Covid-19 Chapter

Aside from the direct impact on production lines and supply chains, the pandemic has also left a legacy in the form of new channels and formats for auditing, most notably increased use of remote methodologies for at least some element of inspections. Certainly, there is continued potential for remote auditing activity, which can help ensure best use of auditors' time during an inspection – as long as all stakeholders appreciate and respect the limitations of the medium.

Remote sessions between inspectors and auditees can add value in the preparation of audits in telematic meetings; the review of CAPAs (corrective and preventive actions); the clarification or extension of information; and even for performing some audits where 360° vision is not fundamental. The realistic scope for remote activity should be assessed via a risk analysis before and after an audit. For any critical auditing activity, however, on-site inspections remain essential.

Targets for 2023: New Cleanroom Measures & Vigilance Around Tech Validation

2023 is set to be another milestone year in Life Sciences, triggering calls for help with quality and compliance related help.

Sterile drugs are currently regaining prominence on the pharmaceutical manufacturing map, for instance. In Europe this has given rise to adaptations to EU GMP. Revised Annex 1 requirements related to the Manufacture of Sterile Medicinal Products were issued last August, starting the clock for compliance. All but one of the new provisions must be fulfilled by August 2023. The updated requirements, designed to protect and increase confidence in the sterility of these products, are significant and wide-ranging, spanning the Quality system and the manufacturing process itself.

To ensure they are ready, affected manufacturers must now perform gap assessments and build a good action plan, or move forward with designated activities as part of that roadmap.

Across the board, the opportunities presented by digital transformation, and regulators' growing expectations for digital



potentially undermining system validation, while sending implementation costs soaring. The new Annex 11 to EU GMP covers the associated changes currently being discussed by Medicines for Europe's Quality working group. In the US, the FDA has also issued new guidance, based on Computer Software Assurance for Production and Quality System Software, and the ISPE GAMP guidance has been updated to GMP 5 2nd edition.

Making Quality Developments Pay

Harnessing digital transformation and Quality system improvements should always be with a view to delivering something more than compliance, of course. Planned properly, any improvements to quality process ought to serve as an aid to operational effectiveness and efficiency.

Tangible, optimised progress will rely on up-to-date knowledge of new chemical-pharmaceutical processes and technologies, to guarantee quality at all stages of drug development, from pre-clinical studies and clinical trials to the development of new treatments or manufacture of medical devices.

Whatever 2023 has in store, the onus is on pharma manufacturers to be ready, by accessing appropriate expertise and reviewing all of the available options in good time.



Dr. Eduard Cayón

Dr. Eduard Cayón is the VP of Audit Services at REPHINE, which provides bespoke technology and manufacturing supply chain compliance consultancy and third party auditing. REPHINE offers services all around the world from three primary locations – Stevenage in the UK, Barcelona in Spain, and Shanghai in China. Dr. Cayón, who holds a Ph.D. in Organic Chemistry, is a deeply experienced pharmaceutical industry consultant and auditor. He has more than 25 years of professional experience developed in Chemical Research, Pharmaceutical Analytical Development, Pharmaceutical and Food Quality Control, Validation, Auditing and Quality Assurance for the Pharmaceutical industry.

Email: eduard.cayon@rephine.com

advancement, mean that manufacturers will need to understand both the capabilities of the new technologies and the intricacies of the processes to be digitalised. This isn't just about getting the most out of new systems, but also about taking care when redesigning and optimising processes, choosing the best

digital platforms, and implementing and validating them, with quality embedded right from the initial design.

That means planning well for all potential target outcomes, rather than trying to add new capabilities at the eleventh hour and