Transforming lives through science, innovation and collaboration

NMR for GxP

What accreditation/compliance means for a contract research organisation

Introductions

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Reading Scientific Services Ltd – Who are we?

Reading based

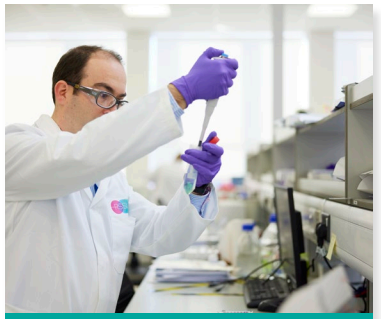
3 Sites

40 mins from London with excellent airport and rail links

Best CRO 2022 & Employer of the Year 2022

GMP, MHRA and FDA approved

ISO 17025 accredited



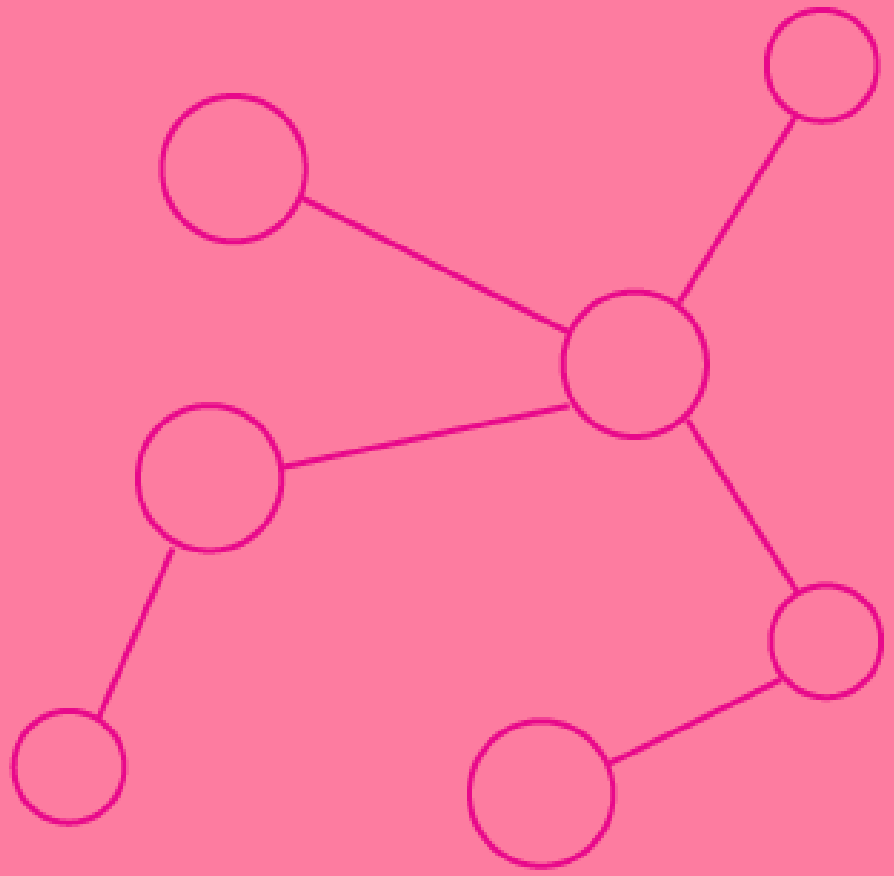
Over 30 years of experience and expertise, from a team of 330 scientists in 12 specialisms

2 NMR's – 400 MHz Jeol and 600 MHz Bruker

Overview

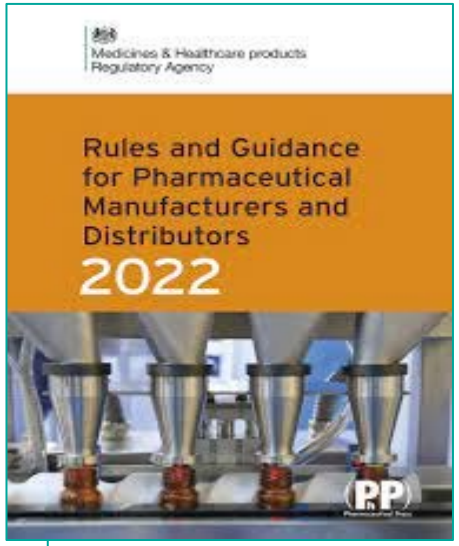
- What does accreditation / compliance mean in industry?
- Follow the accreditation / compliance aspects of a typical project
- Focus on equipment management under accreditation and compliance programmes
- What are the biggest challenges for accreditation / compliance?

What does accreditation / compliance mean from an industry perspective?

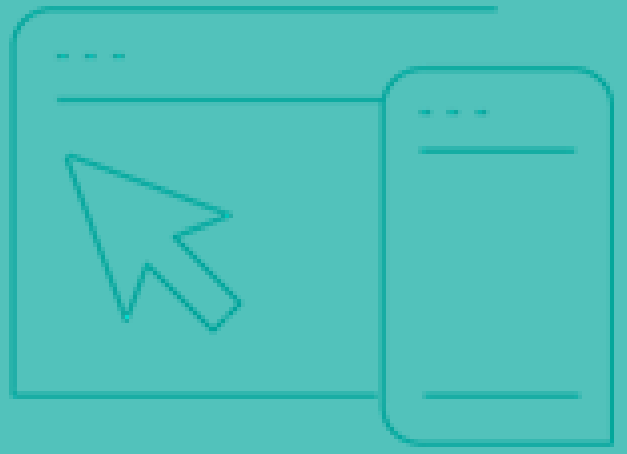


Importance of accreditation for RSSL

- Minimum ISO/IEC 17025 based QMS for food, and GMP compliance for pharma
- Audits and Inspections: MHRA, FDA, UKAS, customers and internal
- GMP MHRA orange guide and ISO 17025:2017 to give the basis of our quality system
- Underpinned by our quality manual; quality policy, equipment management, lab environment, internal audits and data integrity measures.
- Company SOP's; controlled documents, training procedures, data recording/checking, change controls, deviations
- Department SOP's; more specific to individual instruments and processes.
- Test Methods; product / material specific instructions



The typical process for an NMR GMP project



Project workflow

Enquiry

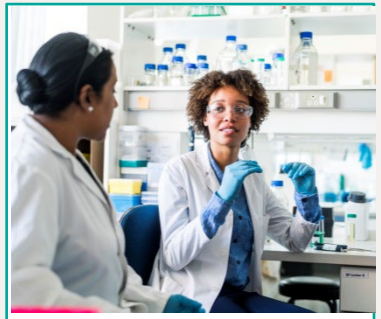
Quote

Technical agreements/NDA's

Sample Arrives

CSA/LIMS

Sample receipt temperatures and storage



Sample Analysis

Documented procedures

Good sampling practices

Data recording

Records of training

Data recorded contemporaneously and fully traceable

Data Analysis

Data processing documented and auditable

Qualified Equipment

Equipment Qualification

- Considerations before instrument is purchased
- Less requirements for equipment for ISO 17025 testing.
- GMP qualification includes 4 phases: design qualification (DQ), installation qualification (IQ), operational qualification (OQ) and performance qualification (PQ)
- The four phases may be managed differently from company to company, but procedure needs to be documented.

Equipment Qualification – RSSL's process

- Design Qualification (DQ)
  - Primarily performed by instrument developer, but user still has responsibility to ensure instrument is suitable for intended needs
  - User requirement specification form:
    - Instrument/operation/software requirements
    - Practical aspects (space, utilities)
    - IT/data integrity
    - Documentation requirements
  - Approval required from QAU team
- Installation Qualification (IQ)
  - Conducted by manufacturer
  - Description of instrument and that it is undamaged on installation
  - Verifies installation site meets requirements and assemble and installs instrument
  - Preliminary testing and documents any abnormal events
  - Connects instrument to computer network

Equipment Qualification – RSSL's process

Operational Qualification (OQ)

- Primarily performed by instrument vendor
- Instrument function tests – normally specified by manufacturer who will have their own protocols
- There may be less stringent requirements for equipment for ISO 17025 compared to GMP

Performance Qualification (PQ)

- Performed by the user
- To ensure continued stability of intended use
- Performance checks - SST
- Process and frequency should be documented
- Preventive maintenance and repairs – service contracts

Other considerations for GMP equipment

Equipment labelled with unique identifier and records kept. This is also required for an accredited lab

Service contracts, annual PM visits. Needs to be performed under protocols. Dependent on service level.

Documentation – manuals, service and calibration reports, controlled worksheets, training documents, logbooks

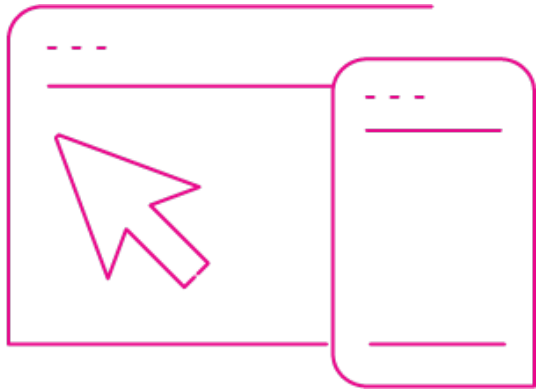
Testing procedures – test methods and SOP's. Should also cover maintenance operations such as cryogen fills as well as use of system.

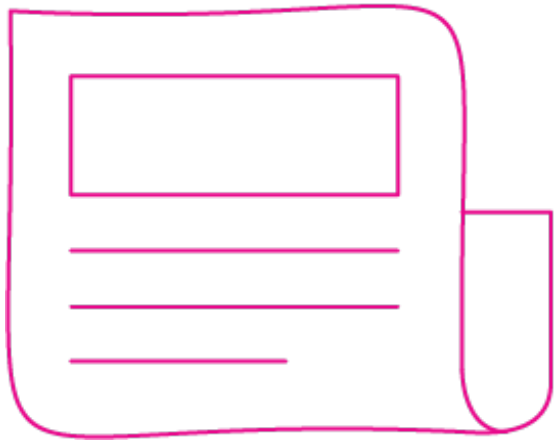
IT systems and audit functions. Capture log-ins, details of administrators, data processing as well as acquisition.

Procedures when things don't go to plan. Deviations, capturing investigations, SST failures.

Data checking and reporting

- Data checking
  - All results need to go through checking procedure
  - Level of data checking can be different for ISO and GMP
  - Data reviewers need to show evidence of competence
  - Procedures for what happens if a ‘wrong’ result is observed.
  - Out of specification (OOS) or unexpected test result (UTR) procedures.





- Reporting
  - Different requirements for ISO and GMP and can be in different formats
  - Tend to include the following information
    - Sample details
    - Name of the customer who submitted the sample
    - Name and signature of reviewer
    - Date of review
    - Certificate issue number

What are the biggest challenges for NMR accreditation?

Challenges

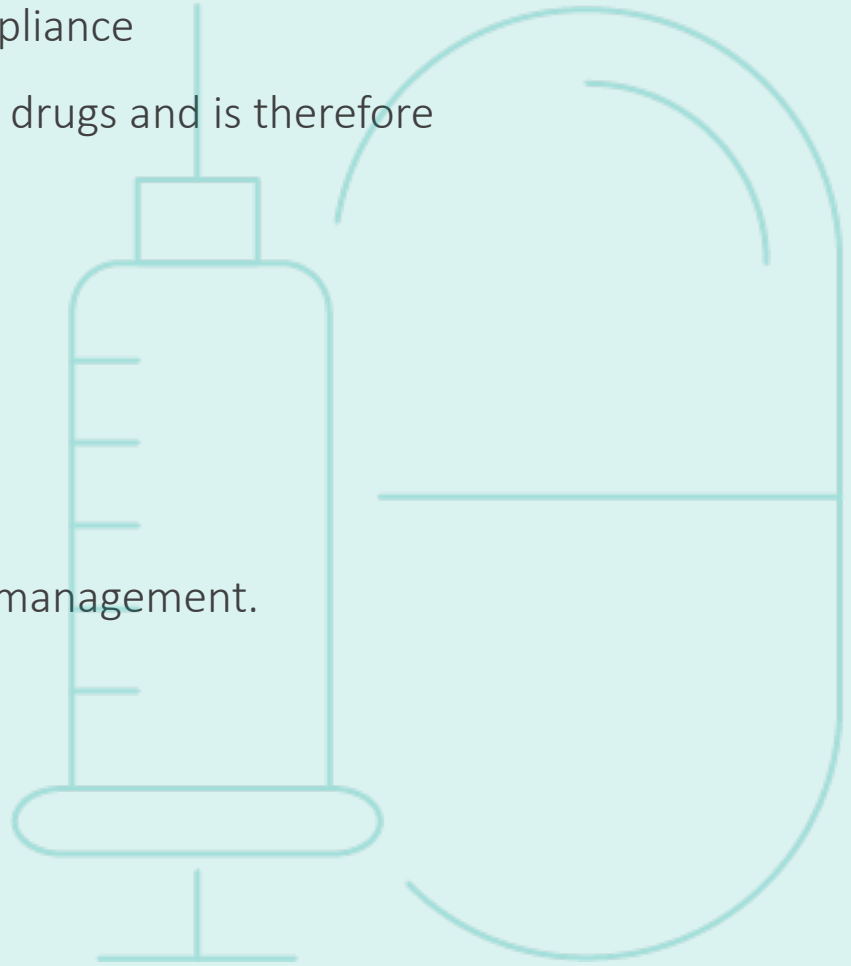
- Unique position working with both Jeol and Bruker
- Biggest challenge in recent years has been computer systems and data integrity.
- Data integrity is a hot topic throughout the industry. Poor practices from companies in the past so now a big focus for MHRA/FDA.
- Data integrity means that all needs to be complete and consistent throughout the data's lifecycle including generation, recording, processing, retention, archiving and destruction. ALCOA+
- Audit trails should be available on software for acquisition and processing. Now in place on more recent versions of software
- Computer systems also need validating. Security considerations such as access control and access levels (super users)

Challenges

- System log ons and data storage are the most difficult aspects for us.
- Vendors software/procedures may not comply with company IT policies and restrictions.
- Other analytical industries (chromatography) seem to have grasped how to deal with data management before NMR – server based systems more readily used.
- Found solutions to issues but it is very complicated and took nearly a year to become compliant on our latest system.
- GMP GAP assessments need to be performed so we can put procedures in place if a system is not fully auditable/traceable e.g. logbooks

Conclusions

- Many aspects that need to be considered for accreditation/compliance
- Extremely important as it could impact raw ingredients/API's for drugs and is therefore life dependant
- Quality management systems are needed to control processes
- Processes need to be documented and traceable
- Data integrity is key (ALCOA+)
- Processes for equipment management
- Main challenges are computerised systems, data integrity, data management.



Q&A Session

Thank you for your time

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