**LIMSpec for Cannabis Testing**

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**Primary Laboratory Workflow**

## 1. Sample and experiment registration

|  |  |  |
| --- | --- | --- |
| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 1.1149](https://www.law.cornell.edu/cfr/text/21/part-1)[42 CFR Part 493.1241](https://www.law.cornell.edu/cfr/text/42/493.1241)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1578-18 C-1-1](https://www.astm.org/e1578-18.html) | **1.1** The system should allow for sample registration prior to (e.g., preregistration) or after (e.g., registration) physical sample collection. |  |
| [21 CFR Part 58.105 (c)](https://www.law.cornell.edu/cfr/text/21/58.105)[21 CFR Part 211.84](https://www.law.cornell.edu/cfr/text/21/211.84)[21 CFR Part 211.101](https://www.law.cornell.edu/cfr/text/21/211.101)[21 CFR Part 226.80](https://www.law.cornell.edu/cfr/text/21/226.80)[21 CFR Part 606.120 (b)](https://www.law.cornell.edu/cfr/text/21/606.120)[21 CFR Part 606.121 (c–i)](https://www.law.cornell.edu/cfr/text/21/606.121)[21 CFR Part 606.140 (c)](https://www.law.cornell.edu/cfr/text/21/606.140)[29 CFR Part 1910.1030 (g)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1096 (e1-6)](https://www.law.cornell.edu/cfr/text/29/1910.1096)[42 CFR Part 493.1232](https://www.law.cornell.edu/cfr/text/42/493.1232)[ABFT Accreditation Manual Sec. D](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1492-11 4.1.1.6](https://www.astm.org/e1492-11r17.html)[ASTM E1578-18 C-1-2](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.2.1.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 3.2.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.3](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Commission Directive 2003/94/EC Article 15](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[OECD GLP Principles 6.1](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.8.6)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Sampling Procedures for PDP 6.4.1.2.6](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #986, Annex 2, 17.11](https://extranet.who.int/prequal/content/who-technical-report-series) | **1.2** The system should allow for creation and use of pre-configured (e.g., for standard inflorescence) and customizable (e.g., for differing substrate/matrix) sample labels, with barcode support. |  |
| [45 CFR Part 162.410](https://www.law.cornell.edu/cfr/text/45/162.410)[CJIS Security Policy 5.6.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center) | **1.3** The system shall provide a means to assign unique identifiers such as a U.S. Department of Food and Agriculture unique cultivator identifier to the enacting entity and any subcontracted entity. The unique identifier should be able to appear on necessary records, documents, and reports referencing those entities. |  |
| [42 CFR Part 493.1241](https://www.law.cornell.edu/cfr/text/42/493.1241)[ASTM E1578-18 C-1-3](https://www.astm.org/Standards/E1578.htm) | **1.4** The system should provide a means for automatically registering samples in the system using any number of triggers such as dates, times, web requests, and intra-system methods like APIs and web services. |  |
| [7 CFR Part 91.19](https://www.law.cornell.edu/cfr/text/7/91.19)[21 CFR Part 1.1152 (a–b)](https://www.law.cornell.edu/cfr/text/21/part-1)[40 CFR Part 262.18](https://www.law.cornell.edu/cfr/text/40/262.18)[ACMG Technical Standards for Clinical Genetics Laboratories C2.1](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1578-18 C-1-4](https://www.astm.org/e1578-18.html)[USDA Sampling Procedures for PDP 6.4.1.1.3](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **1.5** The system should permit metadata like lot number, field number, client demographics, sampling point, random selection process used, and other cannabis-specific identifiers to be included during registration. |  |
| [ASTM E1578-18 C-1-5](https://www.astm.org/Standards/E1578.htm) | **1.6** The system shall allow for the addition, modification, and removal of new, pre-defined, and custom cannabis-related analytical tests and test protocols—with configurable measurement units and substrates/matrices—while preferably coming pre-loaded with common state- and local-compliant cannabis testing protocols. These protocols should include testing for acid and neutral forms of cannabinoids, potency testing, strain identification, water activity, moisture content, pesticides, solvents, heavy metals, microbiological contaminates, fungi, mycotoxins, and foreign matter. |  |
| [ASTM E1578-18 C-1-6](https://www.astm.org/Standards/E1578.htm) | **1.7** The system, when applicable, should offer safety information related to a submitted cannabis-related sample upon registration, which is relevant to the lab's location and sample type. |  |
| [ASTM E1578-18 C-1-7](https://www.astm.org/Standards/E1578.htm) | **1.8** The system should support the creation, use, and configuration of predefined metadata templates, capturing metadata mandated by state and local laws and regulations for various cannabis substrates/matrices and derivative products, as well as any other ad-hoc, single, and multiple samples. |  |
| [7 CFR Part 91.19](https://www.law.cornell.edu/cfr/text/7/91.19)[7 CFR Part 331.17](https://www.law.cornell.edu/cfr/text/7/331.17)[9 CFR Part 121.17](https://www.law.cornell.edu/cfr/text/9/121.17)[21 CFR Part 1.1149](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (a–b)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 58.105 (c)](https://www.law.cornell.edu/cfr/text/21/58.105)[21 CFR Part 58.195](https://www.law.cornell.edu/cfr/text/21/58.105)[21 CFR Part 129.80 (g)](https://www.law.cornell.edu/cfr/text/21/part-129)[21 CFR Part 211.84](https://www.law.cornell.edu/cfr/text/21/211.84)[21 CFR Part 211.170](https://www.law.cornell.edu/cfr/text/21/211.170)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[21 CFR Part 312.57 (d)](https://www.law.cornell.edu/cfr/text/21/312.57)[40 CFR Part 141.33](https://www.law.cornell.edu/cfr/text/40/141.33)[42 CFR Part 73.17](https://www.law.cornell.edu/cfr/text/42/73.17)[42 CFR Part 493.1105](https://www.law.cornell.edu/cfr/text/42/493.1105)[42 CFR Part 493.1241](https://www.law.cornell.edu/cfr/text/42/493.1241)[42 CFR Part 493.1242](https://www.law.cornell.edu/cfr/text/42/493.1242)[42 CFR Part 493.1274 (f)](https://www.law.cornell.edu/cfr/text/42/493.1274)[42 CFR Part 493.1283](https://www.law.cornell.edu/cfr/text/42/493.1283)[AAFCO QA/QC Guidelines for Feed Laboratories Sec. 2.2–3](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL Sec. 5.7.1.2](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. D](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ACMG Technical Standards for Clinical Genetics Laboratories C2](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASTM E1578-18 C-1-8](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.2.1.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA 815-R-05-004 Chap. IV, Sec. 6 and 8](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 8](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Supplement 1](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1000PUE.txt)[EPA ERLN Laboratory Requirements 3.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.4.10–11](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.7.1–6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.2 and 2.2.3](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Commission Directive 2003/94/EC Article 11.4](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[ISO 15189:2012 5.7.2](https://www.iso.org/standard/56115.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OECD GLP Principles 6.1](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.8.6)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Sample Processing and Analysis Procedures for PDP 5.1 and 5.1.13](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Sampling Procedures for PDP 5.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #986, Annex 2, 17.11 and 17.21](https://extranet.who.int/prequal/content/who-technical-report-series) | **1.9** The system shall be able to define the sample collection details for registered samples, including container size and type, number of containers, collection date and time, name of the collector, lot number, storage location, preservation method, collection methods used (standard and nonstandard), safety concerns, and retention period. |  |
| [ASTM E1578-18 C-1-9](https://www.astm.org/e1578-18.html)[ACMG Technical Standards for Clinical Genetics Laboratories G1.4](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[CLSI QMS22 2.2.1.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 3.2.1](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.4.5](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **1.10** The system should allow for the addition of observations and descriptions to registered samples in the form of free text. |  |
| [ASTM E1578-18 C-1-10](https://www.astm.org/Standards/E1578.htm) | **1.11** The system should support the creation of user-definable default sample registration preferences and/or input screens—including associated measurement units and any other regulation-mandated attributes—based upon the various cannabis substrates/matrices and derivative products tested, as well as the sample source location and/or laboratory location. |  |
| [21 CFR Part 1.1149](https://www.law.cornell.edu/cfr/text/21/part-1)[ASTM E1578-18 C-1-11](https://www.astm.org/e1578-18.html)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.8.7)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[WADA International Standard for Laboratories (ISL) 5.3.2](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **1.12** The system should allow for the manual or automated recording of sample shipping details such as deliverer, location, shipper sample/batch/lot ID, laboratory sample/batch/lot ID, shipper ID, included documentation, and relevant dates and times for both preregistered and post-analysis samples and batches, for chain-of-custody tracking purposes. |  |
| [21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 58.107 (c)](https://www.law.cornell.edu/cfr/text/21/58.107)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[42 CFR Part 493.1241](https://www.law.cornell.edu/cfr/text/42/493.1241)[42 CFR Part 493.1274](https://www.law.cornell.edu/cfr/text/42/493.1274)[42 CFR Part 493.1283](https://www.law.cornell.edu/cfr/text/42/493.1283)[AAVLD Requirements for an AVMDL Sec. 5.8.2](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual D-3](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1578-18 C-1-12](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[EPA ERLN Laboratory Requirements 3.2.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.1.11](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.4.10](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.3](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Commission Directive 2003/94/EC Article 15](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[ISO/IEC 17025:2017 7.4.2](https://www.iso.org/standard/66912.html)[OECD GLP Principles 6.2](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.8.5)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Sample Processing and Analysis Procedures for PDP 5.1.11](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Sampling Procedures for PDP 6.4.1.2.5](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.3.2](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 17.11](https://extranet.who.int/prequal/content/who-technical-report-series) | **1.13** The system shall assign each sample registered in the system a unique identifier using methodologies such as an ID with an incrementing integer or a user-defined naming format. |  |
| [7 CFR Part 331.17](https://www.law.cornell.edu/cfr/text/7/331.17)[9 CFR Part 121.17](https://www.law.cornell.edu/cfr/text/9/121.17)[21 CFR Part 58.107 (d)](https://www.law.cornell.edu/cfr/text/21/58.107)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[42 CFR Part 73.17](https://www.law.cornell.edu/cfr/text/42/73.17)[ASTM E1578-18 C-1-13](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.2.1.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 4.4.7](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.3](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[OECD GLP Principles 6.1](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.8.3)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf) | **1.14** The system shall provide a user-friendly means for tracking and acknowledging the physical reception of submitted sample or specimen material in the laboratory, including date and time of reception. |  |
| [21 CFR Part 1.1149](https://www.law.cornell.edu/cfr/text/21/part-1)[ASTM E1578-18 C-1-14](https://www.astm.org/Standards/E1578.htm)[EPA ERLN Laboratory Requirements 4.4.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **1.15** The system shall allow for the comparison of received samples to the sampling requirements of the customer or laboratory in order to identify variances from those requirements. |  |
| [ACMG Technical Standards for Clinical Genetics Laboratories C3.3](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[AAVLD Requirements for an AVMDL Sec. 5.8.3](https://www.aavld.org/accreditation-requirements-page)[ASTM E1492-11 4.1.1.5](https://www.astm.org/e1492-11r17.html)[ASTM E1492-11 4.1.6](https://www.astm.org/e1492-11r17.html)[ASTM E1492-11 4.3.3.2](https://www.astm.org/e1492-11r17.html)[ASTM E1578-18 C-1-15](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.2.1.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 4.4.13](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.11.8](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.8.7.2)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Sample Processing and Analysis Procedures for PDP 5.1.3–7](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Sampling Procedures for PDP 6.4.1.1.9](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.3.2 and 5.3.3.1](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **1.16** The system should provide a means to document any undesirable or unexpected characteristics of a submitted sample. |  |
| [21 CFR Part 1.1149](https://www.law.cornell.edu/cfr/text/21/part-1)[A2LA C211 5.7](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASTM E1578-18 C-1-16](https://www.astm.org/e1578-18.html)[EPA QA/G-5 2.2.2 and 2.2.3](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5) | **1.17** The system should provide a means to document and associate sample preparation activities such as grinding, homogenization, extraction, filtration, and evaporation with a given sample, batch, method, protocol, etc. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[7 CFR Part 331.17](https://www.law.cornell.edu/cfr/text/7/331.11)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[9 CFR Part 121.17](https://www.law.cornell.edu/cfr/text/9/121.17)[21 CFR Part 1.1149](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[42 CFR Part 73.17](https://www.law.cornell.edu/cfr/text/42/73.17)[42 CFR Part 493.1274](https://www.law.cornell.edu/cfr/text/42/493.1274)[A2LA C223 4.13](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[A2LA C223 5.8](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[ABFT Accreditation Manual Sec. D-9–10](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.8.1.1](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1492-11 (throughout)](https://www.astm.org/e1492-11r17.html)[ASTM E1578-18 C-1-17](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.2.3.5](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA 815-R-05-004 Chap. III, Sec. 12](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Appendix A](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 3.2.3–5](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.1.13](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.4.8–9](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.3](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, I, K - FSM 14.1.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, D - FSM 14.1.2](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, I - FSM 14.1.3](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[SQF FSC 9, Food Manufacturing, Part B, 2.6.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.6.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.6.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.8.7.5 and 5.8.8)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[WADA International Standard for Laboratories (ISL) (throughout)](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **1.18** The system shall have the ability to maintain the chain of custody of every sample, meaning the recording of every single sample distribution step to personnel—including details such as unique identifier, name, location, date, and time—while the sample is in the laboratory’s possession. |  |
| [7 CFR Part 331.16](https://www.law.cornell.edu/cfr/text/7/331.16)[9 CFR Part 121.16](https://www.law.cornell.edu/cfr/text/9/121.16)[42 CFR Part 73.16](https://www.law.cornell.edu/cfr/text/42/73.16) | **1.19** In the case of regulated samples such as cannabis, the system shall also allow for the recording of transfers to other entities outside the laboratory, including details such as personnel involved, their certification numbers (if applicable), dates, times, and any other required shipping information. |  |
| [ACMG Technical Standards for Clinical Genetics Laboratories G1.1](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf) | **1.20** The system shall be able to link various records together based on a record's metadata, including shipper sample/batch/lot ID, laboratory sample/batch/lot ID, customer, and more. |  |

## 2. Sample management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 C-2-1](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.11.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[SQF FSC 9, Food Manufacturing, Part B, 2.6.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.6.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.6.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf) | **2.1** The system shall record and maintain the chain of custody for the laboratory's standards and reagents. |  |
| [ASTM E1578-18 C-2-2](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.11.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **2.2** The system shall record the current and historical storage location for the laboratory's standards and reagents. |  |
| [ASTM E1578-18 C-2-3](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.11.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **2.3** The system shall allow the laboratory's previously standardized standards and reagents to be assigned a new standard value. |  |
| [ASTM E1578-18 C-2-4](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.11.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **2.4** The system shall require the recording of a standard and reagent's first opening date. |  |
| [ASTM E1578-18 C-2-5](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.11.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **2.5** The system shall allow only active standards and reagents to be shown as available for use. |  |
| [ASTM E1578-18 C-2-6](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.11.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **2.6** The system shall allow standards and reagents to be flagged as no longer available for use by authorized personnel. |  |
| [ASTM E1578-18 C-2-7](https://www.astm.org/e1578-18.html) | **2.7** The system shall allow logically associated samples or specimens to be grouped together based on associated metadata such as type, test method, assigned user, and status. |  |
| [ASTM E1578-18 C-2-8](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 3.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[ISO/IEC 17025:2017 7.4.2](https://www.iso.org/standard/66912.html) | **2.8** The system should allow for the accurate identification of a physical sample or specimen in the system via barcode or RFID technology. |  |
| [7 CFR Part 331.17](https://www.law.cornell.edu/cfr/text/7/331.17)[9 CFR Part 121.17](https://www.law.cornell.edu/cfr/text/9/121.17)[21 CFR Part 211.84](https://www.law.cornell.edu/cfr/text/21/211.84)[42 CFR Part 73.17](https://www.law.cornell.edu/cfr/text/42/73.17)[ASTM E1492-11 4.2.1](https://www.astm.org/e1492-11r17.html)[ASTM E1578-18 C-2-9](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf) | **2.9** The system should provide a means to manually or automatically track sample inventory amounts and status, including sample weight reconciliation, while limiting data entry errors. |  |
| [21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[A2LA C211 5.4](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.9.1.1](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 C-2-10](https://www.astm.org/e1578-18.html) | **2.10** The system shall be able to link test methods and specifications to standards and reagents. |  |
| [21 CFR Part 1.1138](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1150](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1153 (c)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 111.315](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 129.80 (g)](https://www.law.cornell.edu/cfr/text/21/part-129)[21 CFR Part 211.84](https://www.law.cornell.edu/cfr/text/21/211.84)[21 CFR Part 211.166–7](https://www.law.cornell.edu/cfr/text/21/211.166)[21 CFR Part 211.194 (e)](https://www.law.cornell.edu/cfr/text/21/211.194)[21 CFR Part 212.40 (c)](https://www.law.cornell.edu/cfr/text/21/212.40)[21 CFR Part 212.61](https://www.law.cornell.edu/cfr/text/21/212.61)[21 CFR Part 212.70 (e)](https://www.law.cornell.edu/cfr/text/21/212.70)[21 CFR Part 225.58](https://www.law.cornell.edu/cfr/text/21/225.58)[21 CFR Part 226.58](https://www.law.cornell.edu/cfr/text/21/226.58)[21 CFR Part 606.65 (c)](https://www.law.cornell.edu/cfr/text/21/606.65)[21 CFR Part 606.151](https://www.law.cornell.edu/cfr/text/21/606.151)[A2LA C223 5.9](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[ACMG Technical Standards for Clinical Genetics Laboratories C6.2](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ACMG Technical Standards for Clinical Genetics Laboratories C10–12](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[ASTM E1578-18 C-2-11](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 3.1.2.1](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.3.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.11.3.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.5](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[NYSDOH ELAP Medical Marijuana Microbiology Guidance](https://www.wadsworth.org/sites/default/files/WebDoc/MM%20guidance%20procedure%20for%20Micro%20iDOC-120320.pdf)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M1 1.1)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 8.5](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Hemp Production Program Laboratory Testing Guidelines, Testing Remediated Hemp Samples 2](https://www.ams.usda.gov/sites/default/files/media/TestingGuidelinesforHemp.pdf)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 12.4h](https://www.ams.usda.gov/services/lab-testing/lab-approval)[WADA International Standard for Laboratories (ISL) 5.3.7](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #961, Annex 13, 12.1](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 17.7](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 17.22–25](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **2.11** The system shall allow samples and tests to be created and used specifically for capturing data related to unique forms of sampling and testing such as representative sampling, calibration testing, quality control testing, preventative maintenance testing, stability testing, sterility testing, compatibility testing, identity testing, proficiency testing, and service-event-related testing. |  |
| [FDA Q1A(R2)](https://www.fda.gov/regulatory-information/search-fda-guidance-documents/q1ar2-stability-testing-new-drug-substances-and-products) | **2.12**The system should allow authorized users to create projects and research studies in the system—including, e.g., stability studies—and associate samples, tests, and metadata such as recommended storage conditions, test frequencies, and container types with the project or study. |  |

## 3. Core laboratory testing and experiments

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 111.315](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 211.84 (d)](https://www.law.cornell.edu/cfr/text/21/211.84)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.1.3.1](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 C-3-1](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.2.2.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[ISO 15189:2012 5.3.2.7](https://www.iso.org/standard/56115.html)[WADA International Standard for Laboratories (ISL) 5.2.7](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **3.1** The system shall be able to record the identity of any standards and reagents used in laboratory testing, as well as for each sample or test during result entry. Linked to their identity should also be manufacturer and supplier information (such as certificates of testing); lot numbers; reception, preparation, and expiry dates; name of preparer; reliability testing results; and approval for use. |  |
| [21 CFR Part 211.84 (e)](https://www.law.cornell.edu/cfr/text/21/211.84)[42 CFR Part 493.1252 (d)](https://www.law.cornell.edu/cfr/text/42/493.1252)[ASTM E1578-18 C-3-2](https://www.astm.org/e1578-18.html)[WADA International Standard for Laboratories (ISL) 5.2.7](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **3.2** The system shall allow users to only select approved, non-expired standards and reagents for tests and experiments. |  |
| [42 CFR Part 493.1252 (d)](https://www.law.cornell.edu/cfr/text/42/493.1252)[ASTM E1578-18 C-3-3](https://www.astm.org/e1578-18.html) | **3.3** The system shall prevent standards, reagents, and other media from being used in testing if they would expire during the testing. |  |
| [ASTM E1578-18 C-3-4](https://www.astm.org/e1578-18.html) | **3.4** The system shall be able to check physical, control, and specification limits for an instrument sample. |  |
| [ASTM E1578-18 C-3-6](https://www.astm.org/e1578-18.html) | **3.5** The system should allow result entry for all tests linked to a single sample, as well as for multiple samples linked to a single test. |  |
| [ASTM E1578-18 C-3-7](https://www.astm.org/e1578-18.html) | **3.6** The system should allow user-definable result entry methods, e.g., uploading from a spreadsheet. |  |
| [ASTM E1578-18 C-3-8](https://www.astm.org/e1578-18.html) | **3.7** The system should allow outsourced samples to be tracked for aliquoting, chain-of-custody, results entry, and approval purposes. |  |
| [ASTM E1578-18 C-3-9](https://www.astm.org/e1578-18.html) | **3.8** The system shall allow the creation and assignment of retest workflow, while allowing the system or assigned user to determine the existence of a retesting due date and whether or not a new sample is required for the retest. |  |
| [ASTM E1578-18 C-3-10](https://www.astm.org/e1578-18.html) | **3.9** The system shall support, at a minimum, the floating point/real number, integer number, text, date, list, file, calculated, Boolean, and interval test result data types, allowing users to define the data type for specific test results. |  |
| [AIHA-LAP Policies 2022 2A.7.8.2](https://www.aihaaccreditedlabs.org/policies)[ASTM E1578-18 C-3-11](https://www.astm.org/e1578-18.html) | **3.10** The system shall allow users to enter operators such as <, >, +, and - with numeric test results. |  |
| [ASTM E1578-18 C-3-12](https://www.astm.org/e1578-18.html) | **3.11** The system should allow inter- and intra-assay calculations to be performed, including the use of advanced math functions. |  |
| [42 CFR Part 493.1241](https://www.law.cornell.edu/cfr/text/42/493.1241)[ASTM E1578-18 C-3-13](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.9.11](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **3.12** The system should effectively alert users upon entry of out-of-specification test results. |  |
| [21 CFR Part 1.1150](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (a–b)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1153 (c)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 106.100 (c–f)](https://www.law.cornell.edu/cfr/text/21/part-106)[21 CFR Part 111.110](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 111.325](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 112.161](https://www.law.cornell.edu/cfr/text/21/part-112)[21 CFR Part 114.100 (a)](https://www.law.cornell.edu/cfr/text/21/part-114)[21 CFR Part 129.80 (g)](https://www.law.cornell.edu/cfr/text/21/part-129)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[21 CFR Part 212.60 (g)](https://www.law.cornell.edu/cfr/text/21/212.60)[21 CFR Part 507.202](https://www.law.cornell.edu/cfr/text/21/part-507)[21 CFR Part 606.160](https://www.law.cornell.edu/cfr/text/21/606.160)[ACMG Technical Standards for Clinical Genetics Laboratories G16.1](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[A2LA C223 5.10](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf) [ASTM E1578-18 C-3-14](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.1.2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 9.3.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 9.3.5](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CLSI QMS22 2.1.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[CLSI QMS22 2.2.2.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 3.1.2.3–4](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 3.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.3.4](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.8.1–4](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.11.16](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[E.U. Commission Reg. No. 852/2004 Annex I, Section II.4.i](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02004R0852-20210324)[E.U. Commission Reg. No. 852/2004 Annex I, Section III.8.d](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02004R0852-20210324)[E.U. Commission Reg. No. 852/2004 Annex I, Section III.9.c](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02004R0852-20210324)[IFS Food 7, Part 2, 4.18.3](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 4.18.3](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[SQF FSC 9, Food Manufacturing, Part B, 2.4.4.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.4.4.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.4.4.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[USDA Data and Instrumentation for PDP 5.4.2](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Data and Instrumentation for PDP 8.1.3](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #986, Annex 2, 15.8](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **3.13** The system shall be able to record a complete record of all data created in the course of a test or experiment, including instruments used, calculations performed, and associated graphs, charts, and spectra. The record should also be able to capture the signatures of those who performed the test or experiment, as well as those who reviewed the record for compliance purposes. |  |
| [WADA International Standard for Laboratories (ISL) 1.2](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **3.14** The system shall allow users to link samples, batches, and tests to a specific accreditation approval status (e.g., ANSI National Accreditation Board accreditation) so as to ensure that only the appropriate accreditation labels are included on resulting test reports and related documentation. |  |

## 4. Results review and verification

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 211.68 (b)](https://www.law.cornell.edu/cfr/text/21/211.68)[42 CFR Part 493.1241](https://www.law.cornell.edu/cfr/text/42/493.1241)[ASTM E1578-18 C-4-1](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.2.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.2.1.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 4.9.11](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.4.1](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[ISO 15189:2012 5.5.1.4](https://www.iso.org/standard/56115.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[WHO Technical Report Series, #996, Annex 5, Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **4.1** The system shall allow for the verification of specification limits for accuracy or tolerances while indicating to the user when values are exceeded. |  |
| [ASTM E1578-18 C-4-2](https://www.astm.org/e1578-18.html)[CLSI AUTO15 1.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/) [EPA ERLN Laboratory Requirements 4.9.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.9.11](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.4.1](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[ISO 15189:2012 5.9.2](https://www.iso.org/standard/56115.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards) | **4.2** The system shall have the capability of automatically authorizing verification check tests and samples if they are within specification limits set by the instruments used to perform the tests. |  |
| [21 CFR Part 211.68](https://www.law.cornell.edu/cfr/text/21/211.68)[21 CFR Part 211.100](https://www.law.cornell.edu/cfr/text/21/211.100)[21 CFR Part 211.160 (a)](https://www.law.cornell.edu/cfr/text/21/211.160)[21 CFR Part 211.188](https://www.law.cornell.edu/cfr/text/21/211.188)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[45 CFR Part 170.315 (d)](https://www.law.cornell.edu/cfr/text/45/170.315)[ASTM E1578-18 C-4-3](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CJIS Security Policy 5.4.1.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.2.2.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 4.9.1 and 4.9.7](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[E.U. Commission Directive 2003/94/EC Article 9.2](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[ICH GCP 4.9.0 and 4.9.3](https://ichgcp.net/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.13.2.3)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[WADA International Standard for Laboratories (ISL) 5.2.3.5](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 15.7 and 15.9](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #996, Annex 5, 4.12](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **4.3** The system shall accurately maintain a full audit trail for modified results. |  |
| [21 CFR Part 1.1152 (c)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 111.110](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 211.68 (b)](https://www.law.cornell.edu/cfr/text/21/211.68)[A2LA C211 5.9.1](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 4.13](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[ABFT Accreditation Manual Sec. E-28–29](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ACMG Technical Standards for Clinical Genetics Laboratories G15.1](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[AIHA-LAP Policies 2022 2A.7.7.2 and 7.7.3](https://www.aihaaccreditedlabs.org/Policies/Pages/default.aspx)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 4.13.2.12](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.9.4–5](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 C-4-4](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.2.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.2.2.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 3.2.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.9.2–3 and 4.9.11](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.11.4](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.10](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[EPA QA/G-5 2.4.1](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Annex 11-6](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[IFS Food 7, Part 2, 5.6.4](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.6.4](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 5.7.1](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 7.8.1.1](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[USDA Data and Instrumentation for PDP 10](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.3.8.1](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #996, Annex 5, 11.9 and Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **4.4** The system shall provide one or more levels of review, as well as interpretation and documentation of results—whether entered manually or via an automated process—before release. |  |
| [ASTM E1578-18 C-4-5](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.2.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.2.5](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[EPA ERLN Laboratory Requirements 4.9.11](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.10](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[EPA QA/G-5 2.4.1](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Annex 11-6](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[IFS Food 7, Part 2, 5.6.4](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.6.4](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 5.9.2](https://www.iso.org/standard/56115.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[WHO Technical Report Series, #996, Annex 5, Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **4.5** The system shall identify out-of-range results and clearly alert the appropriate individuals for further evaluation of the results. |  |
| [ASTM E1578-18 C-4-6](https://www.astm.org/e1578-18.html)[EPA QA/G-5 2.2.10](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[EPA QA/G-5 2.4.1](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Annex 11-6](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf) | **4.6** The system shall allow for the comparison of entered results with pre-defined specification limits from master data, clearly alerting the user when the results exceed those specification limits. |  |
| [CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI AUTO15 4.0](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards) | **4.7** The system's autoverification system should be able to be validated and have a rapid means to automatically or manually shut it down in the event of a problem or manual changes being made to the autoverification system. The autoverification should be able to be revalidated afterwards. |  |

## 5. Sample, experiment, and study approval and verification

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 C-5-1](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.2.3.5](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[USDA Sample Processing and Analysis Procedures for PDP 5.9–10](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.3.12.1](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **5.1** The system shall accurately record all details of a sample's final disposition, including, when applicable, storage container type and ID, disposal method, disposal location, person responsible for disposition, etc. |  |
| [AIHA-LAP Policies 2022 2A.7.7.2](https://www.aihaaccreditedlabs.org/policies)[ASTM E1578-18 C-5-2](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.2.2.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[WHO Technical Report Series, #996, Annex 5, 4.12](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **5.2** The system should allow authorized personnel to view relevant metadata for results during the review and approval process, including the instruments and reagents used, raw data from instruments, and associated reports. |  |
| [21 CFR Part 211.160 (b)](https://www.law.cornell.edu/cfr/text/21/211.160)[ASTM E1578-18 C-5-3](https://www.astm.org/e1578-18.html)[EPA 815-R-05-004 Chap. IV, Sec. 6.1](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF) | **5.3** The system should provide appropriate functions for specific sample statuses like "approved," "rejected," and "cancelled," including the ability to handle re-test, re-sampling, re-calculation, out-of-specification response and notification, and disposition functions. |  |

## 6. Reporting

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 C-6-1](https://www.astm.org/e1578-18.html) | **6.1** The system shall be able to store files in an electronic format and link them to standards, reagents, and samples tested. |  |
| [EPA ERLN Laboratory Requirements 3.4](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.1.4](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.12–15](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **6.2** The system shall be able to export data in a computer-readable (importable into a relational database) format—such as an unformatted spreadsheet, comma-separated value (CSV) file, or extensible markup language (XML) file—as well as PDF format, for reporting purposes. |  |
| [42 CFR Part 493.1291 (g) and (h)](https://www.law.cornell.edu/cfr/text/42/493.1291)[ACMG Technical Standards for Clinical Genetics Laboratories F7.2](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASTM E1578-18 C-6-2](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.1.2.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 4.11.4](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.4.2](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards) | **6.3** The system shall alert stakeholders in advance to cases when the analyzed sample may be out-of-specification or may not meet expected turnaround time requirements. |  |
| [ABFT Accreditation Manual Sec. G-2](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf) | **6.4** The system shall allow an authorized individual to report final results in a semi-quantitative manner (e.g., "less than X mg/L") when doing so would provide relevant information to the report recipient. |  |
| [7 CFR Part 91.25](https://www.law.cornell.edu/cfr/text/7/91.25)[21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[40 CFR Part 141.33](https://www.law.cornell.edu/cfr/text/40/141.33)[42 CFR Part 493.1291 (c–e)](https://www.law.cornell.edu/cfr/text/42/493.1291)[AAFCO QA/QC Guidelines for Feed Laboratories Sec. 2](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL Sec. 5.4.2.1](https://www.aavld.org/accreditation-requirements-page)[AAVLD Requirements for an AVMDL Sec. 5.10.2–5](https://www.aavld.org/accreditation-requirements-page)[AIHA-LAP Policies 2022 2A.7.8.1](https://www.aihaaccreditedlabs.org/policies)[ABFT Accreditation Manual Sec. E-12 and -32](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1578-18 C-6-3](https://www.astm.org/e1578-18.html)[EPA 815-R-05-004 Chap. IV, Sec. 6.6 and 8](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 8](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[ISO 15189:2012 4.5.2](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.8.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 7.5.1](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 7.8.1.1](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 7.8.2.1](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 7.8.3.1](https://www.iso.org/standard/66912.html)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 12.4d](https://www.ams.usda.gov/services/lab-testing/lab-approval)[WHO Technical Report Series, #986, Annex 2, 15.43](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **6.5** The system shall substantiate the status of verified results by using tools like a customizable certificate of analysis. The configuration options for certificates of analysis shall allow for setting unique identifiers; analysis procedures used; measurement units; reference intervals; environmental conditions; who provided the results; pass/fail status; additional comments, opinions, and interpretations and who provided them; applicable times and dates; and any other required fields as dictated by state and local regulations. |  |
| [7 CFR Part 91.26–27](https://www.law.cornell.edu/cfr/text/7/91.26)[21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[ASTM E1578-18 C-6-4](https://www.astm.org/e1578-18.html) | **6.6** The system shall allow a certificate of analysis to be generated upon the verification and approval of results and associated metadata by authorized personnel. |  |
| [A2LA C211 5.10](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASTM E1578-18 C-6-5](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.1.2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 9.3.5](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CLSI QMS22 2.2.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[ISO 15189:2012 5.8.1](https://www.iso.org/standard/56115.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.10)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Hemp Production Program Laboratory Testing Guidelines, Information Sharing 3](https://www.ams.usda.gov/sites/default/files/media/TestingGuidelinesforHemp.pdf)[WADA International Standard for Laboratories (ISL) 5.3.8.4](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **6.7** The system shall provide the ability to clearly and accurately generate reports for a variety of standard situations, including certificates of analysis from testing, pending samples for approval, out-of-specification samples and tests, instruments pending calibration, expired reagents to be disposed, and trend charts of laboratory performance. |  |
| [7 CFR Part 331.5](https://www.law.cornell.edu/cfr/text/7/331.5)[9 CFR Part 121.5–6](https://www.law.cornell.edu/cfr/text/9/121.5)[21 CFR Part 1.1110](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (a–b)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 58.185](https://www.law.cornell.edu/cfr/text/21/58.185)[21 CFR Part 312.64](https://www.law.cornell.edu/cfr/text/21/312.64)[21 CFR Part 812.150](https://www.law.cornell.edu/cfr/text/21/812.150)[40 CFR Part 141.31](https://www.law.cornell.edu/cfr/text/40/141.31)[40 CFR Part 141.721](https://www.law.cornell.edu/cfr/text/40/141.721)[40 CFR Part 370 Subpart C](https://www.law.cornell.edu/cfr/text/40/part-370/subpart-C)[40 CFR Part 372 Subpart B](https://www.law.cornell.edu/cfr/text/40/part-372/subpart-B)[40 CFR Part 704](https://www.law.cornell.edu/cfr/text/40/part-704)[40 CFR Part 717 Subpart A](https://www.law.cornell.edu/cfr/text/40/part-717/subpart-A)[40 CFR Part 720.40](https://www.law.cornell.edu/cfr/text/40/720.40)[42 CFR Part 73.5–6](https://www.law.cornell.edu/cfr/text/42/73.5)[42 CFR Part 493.43 (d)](https://www.law.cornell.edu/cfr/text/42/493.43)[ABFT Accreditation Manual Sec. E-7](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ACMG Technical Standards for Clinical Genetics Laboratories C13.3](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ACMG Technical Standards for Clinical Genetics Laboratories E8](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ACMG Technical Standards for Clinical Genetics Laboratories G17.1](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASTM E1578-18 C-6-7](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CJIS Security Policy 5.3.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EPA ERLN Laboratory Requirements 4.12–15](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.3.2](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[IFS Food 7, Part 4, 2.x](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 4, 1.x](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[NIST 800-53, Rev. 5, IR-6 and IR-6(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[OECD GLP Principles 9.1](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (throughout)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP (throughout)](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.3.8.4](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **6.8** The system should, in addition to standard reports, provide the means for custom automatic and manual reporting, including but not limited to sample registration reports, work and backlog lists, laboratory performance reports, instrument reports, statistical analysis reports, regulatory reports, incident reports, chain of custody reports, quality assurance reports, service reports, inventory analysis reports, and investigator/sponsor reports. |  |
| [7 CFR Part 91.28](https://www.law.cornell.edu/cfr/text/7/91.28)[21 CFR Part 1.1154 (c)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 58 Sec. 58.185 (c)](https://www.law.cornell.edu/cfr/text/21/58.185)[A2LA C211 5.10.9](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[AAVLD Requirements for an AVMDL Sec. 5.10.9–10](https://www.aavld.org/accreditation-requirements-page)[CLSI QMS22 2.2.3.4](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[ICH GCP 4.9.3](https://ichgcp.net/)[ISO/IEC 17025:2017 7.8.8](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OECD GLP Principles 9.1](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.10.9)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf) | **6.9** The system shall clearly identify a changed, amended, or re-issued report as being such, and clearly identify any change of information and reason for change in such a report. |  |
| Currently no regulatory- or standard-based requirement for this and thus not in the original LIMSpec | **6.10**The system should provide a means to use data and metadata in the system to create formulas for developing key performance measures (KPMs), which can be monitored, visualized, and reported on by authorized personnel on a periodic basis. |  |
| Currently no regulatory- or standard-based requirement for this and thus not in the original LIMSpec | **6.11**The system should provide a secure web portal for clients to not only order tests but also review the results of their ordered tests, including full access to the associated certificates of analysis. |  |

**Maintaining Laboratory Workflow and Operations**

## 7. Document and records management

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| --- | --- | --- |
| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [7 CFR Part 331 (throughout)](https://www.law.cornell.edu/cfr/text/7/part-331)[9 CFR Part 121 (throughout)](https://www.law.cornell.edu/cfr/text/9/part-121)[10 CFR Part 20 (throughout)](https://www.law.cornell.edu/cfr/text/10/part-20)[21 CFR Part 7 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-7)[21 CFR Part 117 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-117)[21 CFR Part 58 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-58)[21 CFR Part 211 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-211)[21 CFR Part 212 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-212)[21 CFR Part 225 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-225)[21 CFR Part 226 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-226)[21 CFR Part 312 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-312)[21 CFR Part 606 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-606)[21 CFR Part 810 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-810)[21 CFR Part 812 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-812)[21 CFR Part 820 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-820)[29 CFR Part 1910.134 (throughout)](https://www.law.cornell.edu/cfr/text/29/1910.134)[29 CFR Part 1910.1030 (throughout)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1200 (throughout)](https://www.law.cornell.edu/cfr/text/29/1910.1200)[29 CFR Part 1910.1450 (throughout)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[40 CFR Part 262.213–14](https://www.law.cornell.edu/cfr/text/40/262.214)[42 CFR Part 73 (throughout)](https://www.law.cornell.edu/cfr/text/42/part-73)[42 CFR Part 493.1200](https://www.law.cornell.edu/cfr/text/42/493.1200)[42 CFR Part 493.1232](https://www.law.cornell.edu/cfr/text/42/493.1232)[42 CFR Part 493.1239](https://www.law.cornell.edu/cfr/text/42/493.1239)[42 CFR Part 493.1251](https://www.law.cornell.edu/cfr/text/42/493.1251)[42 CFR Part 493.1291 (j)](https://www.law.cornell.edu/cfr/text/42/493.1291)[45 CFR Part 164 (throughout)](https://www.law.cornell.edu/cfr/text/45/part-164)[61 FR 38806 (throughout)](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[A2LA C211 4.3](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 4.13](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAFCO QA/QC Guidelines for Feed Laboratories (throughout)](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL (throughout)](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual (throughout)](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1188-11 3.5.2](https://www.astm.org/e1188-11r17.html)[ASTM E1492-11 4.3.3.3 and 4.4.4](https://www.astm.org/e1492-11r17.html)[ASTM E1578-18 D-1-1](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.1.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 3.2.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.1.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.2.2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.2.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual (throughout)](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CJIS Security Policy (throughout)](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice (throughout)](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[EPA 815-R-05-004 (throughout)](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements (throughout)](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 (throughout)](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Commission Directive 2003/94/EC (throughout)](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[FDA Hazard Analysis Critical Control Point (throughout)](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM (throughout)](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2 (throughout)](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2 (throughout)](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 4.3](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.5.3](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.9.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 5.3](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 5.5](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 8.3.2](https://www.iso.org/standard/66912.html)[ISO/TS 22002-1:2009 (throughout)](https://www.iso.org/standard/44001.html)[ISO/TS 22002-4:2013 (throughout)](https://www.iso.org/standard/60969.html)[ISO/TS 22002-6:2016 (throughout)](https://www.iso.org/standard/66126.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[NYSDOH ELAP Medical Marijuana Microbiology Guidance](https://www.wadsworth.org/sites/default/files/WebDoc/MM%20guidance%20procedure%20for%20Micro%20iDOC-120320.pdf)[NIST 800-53, Rev. 5 (throughout)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[OECD GLP Principles 8](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[OSHA 1910.1200(b)(3)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200)[OSHA 1910.1450(e) and (h)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1450)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[Safe Food for Canadians Regulations SOR/2018-108 (throughout)](https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-108/index.html)[SQF FSC 9, Food Manufacturing, Part B (throughout)](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B (throughout)](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B (throughout)](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (throughout)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP (throughout)](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Data and Instrumentation for PDP (throughout)](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Sample Processing and Analysis Procedures for PDP (throughout)](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #961, Annex 13 (throughout)](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2 (throughout)](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #996, Annex 5 (throughout)](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **7.1** The system shall be capable of creating, managing, and securely holding a variety of document types, while also allowing for the review and approval of those documents using version and release controls. |  |
| [7 CFR Part 331 (throughout)](https://www.law.cornell.edu/cfr/text/7/part-331)[9 CFR Part 121 (throughout)](https://www.law.cornell.edu/cfr/text/9/part-121)[21 CFR Part 1.1152 (c)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 7 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-7)[21 CFR Part 58 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-58)[21 CFR Part 117 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-117)[21 CFR Part 211 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-211)[21 CFR Part 212 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-212)[21 CFR Part 225 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-225)[21 CFR Part 226 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-226)[21 CFR Part 312 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-312)[21 CFR Part 606 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-606)[21 CFR Part 810 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-810)[21 CFR Part 812 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-812)[21 CFR Part 820 (throughout)](https://www.law.cornell.edu/cfr/text/21/part-820)[29 CFR Part 1910.134 (c)](https://www.law.cornell.edu/cfr/text/29/1910.134)[29 CFR Part 1910.1030 (throughout)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1200 (e)](https://www.law.cornell.edu/cfr/text/29/1910.1200)[29 CFR Part 1910.1450 (throughout)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[40 CFR Part 262.214](https://www.law.cornell.edu/cfr/text/40/262.214)[42 CFR Part 73 (throughout)](https://www.law.cornell.edu/cfr/text/42/part-73)[42 CFR Part 93.300–5](https://www.law.cornell.edu/cfr/text/42/93.300)[42 CFR Part 493.1200](https://www.law.cornell.edu/cfr/text/42/493.1200)[42 CFR Part 493.1232](https://www.law.cornell.edu/cfr/text/42/493.1232)[42 CFR Part 493.1239](https://www.law.cornell.edu/cfr/text/42/493.1239)[42 CFR Part 493.1251](https://www.law.cornell.edu/cfr/text/42/493.1251)[42 CFR Part 493.1291 (j)](https://www.law.cornell.edu/cfr/text/42/493.1291)[42 CFR Part 493.1773 (c–d)](https://www.law.cornell.edu/cfr/text/42/493.1773)[45 CFR Part 160.310](https://www.law.cornell.edu/cfr/text/45/160.310)[45 CFR Part 164 (throughout)](https://www.law.cornell.edu/cfr/text/45/part-164)[61 FR 38806 (throughout)](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[A2LA C211 (throughout)](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 (throughout)](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAFCO QA/QC Guidelines for Feed Laboratories (throughout)](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL (throughout)](https://www.aavld.org/accreditation-requirements-page)[ACMG Technical Standards for Clinical Genetics Laboratories (throughout)](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[AIHA-LAP Policies 2022 Appendix H5.8](https://www.aihaaccreditedlabs.org/policies)[ASTM E1188-11 3.5.2](https://www.astm.org/e1188-11r17.html)[ASTM E1492-11 4.3.3.3 and 4.4.4](https://www.astm.org/e1492-11r17.html)[ASTM E1578-18 D-1-2](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.1.2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 3.3.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.2.2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.2.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual (throughout)](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL), 6th Edition (throughout)](https://www.cdc.gov/labs/BMBL.html)[CJIS Security Policy (throughout)](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 (throughout)](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA 815-R-05-004 (throughout)](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements (throughout)](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 (throughout)](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Commission Directive 2003/94/EC (throughout)](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[FDA Hazard Analysis Critical Control Point (throughout)](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM (throughout)](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2 (throughout)](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2 (throughout)](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 (throughout)](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 (throughout)](https://www.iso.org/standard/66912.html)[ISO/TS 22002-1:2009 (throughout)](https://www.iso.org/standard/44001.html)[ISO/TS 22002-4:2013 (throughout)](https://www.iso.org/standard/60969.html)[ISO/TS 22002-6:2016 (throughout)](https://www.iso.org/standard/66126.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[NYSDOH ELAP Medical Marijuana Microbiology Guidance](https://www.wadsworth.org/sites/default/files/WebDoc/MM%20guidance%20procedure%20for%20Micro%20iDOC-120320.pdf)[NIST 800-53, Rev. 5 (throughout)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[OECD GLP Principles 8](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[OSHA 1910.1020 (throughout)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1020)[OSHA 1910.1200(b)(3)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200)[OSHA 1910.1450(h)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1450)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[Safe Food for Canadians Regulations SOR/2018-108 (throughout)](https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-108/index.html)[SQF FSC 9, Food Manufacturing, Part B (throughout)](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B (throughout)](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B (throughout)](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (throughout)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP (throughout)](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Data and Instrumentation for PDP (throughout)](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Hemp Production Program Laboratory Testing Guidelines (throughout)](https://www.ams.usda.gov/sites/default/files/media/TestingGuidelinesforHemp.pdf)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 12.3](https://www.ams.usda.gov/services/lab-testing/lab-approval)[USDA Sample Processing and Analysis Procedures for PDP (throughout)](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) (throughout)](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WADA International Standard for the Protection of Privacy and Personal Information (ISPPPI) (throughout)](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-protection-privacy-and-personal)[WHO Technical Report Series, #961, Annex 13 (throughout)](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2 (throughout)](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #996, Annex 5 (throughout)](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **7.2** The system shall have the ability to readily provide authorized access to electronic documents such as standard operating procedures, quality manuals, laboratory management plans, instrument manuals, employee medical records, material safety data sheets, information exchange agreements, confidentiality agreements, and other applicable documents to designated personnel and officials. |  |
| [21 CFR Part 1.1154 (c)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 820.40 (a)](https://www.law.cornell.edu/cfr/text/21/820.40)[42 CFR Part 493.1251 (e)](https://www.law.cornell.edu/cfr/text/42/493.1251)[A2LA C211 4.3](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[AAVLD Requirements for an AVMDL Sec. 4.3](https://www.aavld.org/accreditation-requirements-page)[ASTM E1578-18 D-1-3](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.2.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[EPA 815-R-05-004 Chap. III, Sec. 11](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.2.4.2](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.1.9](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[ISO 15189:2012 4.3](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.5.3](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.9.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 7.5.2](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 8.3.2](https://www.iso.org/standard/66912.html)[USDA Administrative Procedures for the PDP 5.5](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #986, Annex 2, 15.5](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **7.3** The system shall be able to clearly provide the most current version of a document and archive prior versions. |  |
| [ASTM E1578-18 D-1-4](https://www.astm.org/e1578-18.html) | **7.4** The system shall allow an applicable standard operating procedure revision to be linked with a test performed using that revision. |  |
| [21 CFR Part 1.1138](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1151](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (e)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 106.91 (c)](https://www.law.cornell.edu/cfr/text/21/part-106)[21 CFR Part 111.110](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 111.315](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 111.320](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 129.80 (g)](https://www.law.cornell.edu/cfr/text/21/part-129)[21 CFR Part 211.160](https://www.law.cornell.edu/cfr/text/21/211.160)[21 CFR Part 212.20 (c)](https://www.law.cornell.edu/cfr/text/21/212.20)[21 CFR Part 212.60 (c)](https://www.law.cornell.edu/cfr/text/21/212.60)[21 CFR Part 226.58 (e)](https://www.law.cornell.edu/cfr/text/21/226.58)[21 CFR Part 820.250 (b)](https://www.law.cornell.edu/cfr/text/21/820.250)[42 CFR Part 493.43 (c)](https://www.law.cornell.edu/cfr/text/42/493.43)[61 FR 38806, 9 CFR Part 310.25](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[61 FR 38806, 9 CFR Part 381.94](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[ASTM E1578-18 D-1-5](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.1.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.2.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[Codex Alimentarius CXC 1-1969, Ch.1, 7.2.3](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXC%2B1-1969%252FCXC_001e.pdf)[Codex Alimentarius CXS 193-1995, Ch.1, 1.3.3](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B193-1995%252FCXS_193e.pdf)[Codex Alimentarius CXS 234-1999 (throughout)](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B234-1999%252FCXS_234e.pdf)[EPA 815-R-05-004 Chap. IV, Sec. 5](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[E.U. Commission Reg. No. 2073/2005 Article 5](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02005R2073-20200308)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 19.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 5.5.2](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS Food 7, Part 2, 5.6.2](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.5.2](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[IFS PACsecure 2, Part 2, 5.6.2](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO/IEC 17025:2017 6.5](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 7.2.1.3](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[NYSDOH ELAP Medical Marijuana Microbiology Guidance](https://www.wadsworth.org/sites/default/files/WebDoc/MM%20guidance%20procedure%20for%20Micro%20iDOC-120320.pdf)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[SQF FSC 9, Food Manufacturing, Part B, 2.4.4](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.4.4](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.4.4](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.4)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 8.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Hemp Production Program Laboratory Testing Guidelines, Summary of Practice 1.2](https://www.ams.usda.gov/sites/default/files/media/TestingGuidelinesforHemp.pdf)[USDA Hemp Production Program Laboratory Testing Guidelines, Testing Methods 3](https://www.ams.usda.gov/sites/default/files/media/TestingGuidelinesforHemp.pdf)[WADA International Standard for Laboratories (ISL) 4.2.1](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 15.14](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **7.5** The system shall allow the creation, approval, rejection, and management of the various cannabis sampling and test methods performed at the laboratory, capturing details about the test method, method reference, specifications, assigned specification limits, holding times, etc., as required by a reference method or regulation. |  |
| [21 CFR Part 1.1138](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1151](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 111.110](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 111.320](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 212.20 (c)](https://www.law.cornell.edu/cfr/text/21/212.20)[21 CFR Part 212.70 (b)](https://www.law.cornell.edu/cfr/text/21/212.70)[A2LA C211 5.4.5](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 5.4](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAVLD Requirements for an AVMDL Sec. 5.4.2.4](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. G-12, -14, and -15](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ACMG Technical Standards for Clinical Genetics Laboratories C10](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ACMG Technical Standards for Clinical Genetics Laboratories F7.3](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.4.5.4](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[Codex Alimentarius CXS 193-1995, Ch.1, 1.3.3](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B193-1995%252FCXS_193e.pdf)[Codex Alimentarius CXS 234-1999 (throughout)](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B234-1999%252FCXS_234e.pdf)[EPA QA/G-5 2.2.4](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Commission Reg. No. 2073/2005 Article 5](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02005R2073-20200308)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 19.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[ISO/IEC 17025:2017 7.2.2.1](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[NYSDOH ELAP Medical Marijuana Microbiology Guidance](https://www.wadsworth.org/sites/default/files/WebDoc/MM%20guidance%20procedure%20for%20Micro%20iDOC-120320.pdf)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.13.2.3)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 8.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 12.4b](https://www.ams.usda.gov/services/lab-testing/lab-approval)[WADA International Standard for Laboratories (ISL) 4.2.1 and 5.3.6](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #961, Annex 13, 10.1](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 4.11](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 15.13](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **7.6** The system shall provide a means for recording validation information for modified existing or new in-house cannabis test methods, either as a method itself or through some other means. Validation information such as procedures used, specifications, performance characteristics, and results obtained shall be allowed as input. |  |
| [7 CFR Part 331.10](https://www.law.cornell.edu/cfr/text/7/331.10)[7 CFR Part 331.15](https://www.law.cornell.edu/cfr/text/7/331.15)[9 CFR Part 2.32](https://www.law.cornell.edu/cfr/text/9/2.32)[9 CFR Part 121.10](https://www.law.cornell.edu/cfr/text/9/121.10)[9 CFR Part 121.15](https://www.law.cornell.edu/cfr/text/9/121.15)[10 CFR Part 30.34 (j-3)](https://www.law.cornell.edu/cfr/text/10/30.34)[21 CFR Part 1.1150](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 11.10 (i)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 58.29](https://www.law.cornell.edu/cfr/text/21/58.29)[21 CFR Part 211.25](https://www.law.cornell.edu/cfr/text/21/211.25)[21 CFR Part 225.10](https://www.law.cornell.edu/cfr/text/21/225.10)[21 CFR Part 226.10](https://www.law.cornell.edu/cfr/text/21/226.10)[21 CFR Part 226.40](https://www.law.cornell.edu/cfr/text/21/226.40)[21 CFR Part 820.25](https://www.law.cornell.edu/cfr/text/21/820.25)[29 CFR Part 1910.134 (c)](https://www.law.cornell.edu/cfr/text/29/1910.134)[29 CFR Part 1910.1030 (g-2)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1030 (h-2)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1200 (h)](https://www.law.cornell.edu/cfr/text/29/1910.1200)[29 CFR Part 1910.1450 (f)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[40 CFR Part 262.207](https://www.law.cornell.edu/cfr/text/40/262.207)[40 CFR Part 262.210–12](https://www.law.cornell.edu/cfr/text/40/262.210)[42 CFR Part 73.10](https://www.law.cornell.edu/cfr/text/42/73.10)[42 CFR Part 73.15](https://www.law.cornell.edu/cfr/text/42/73.15)[42 CFR Part 493.43 (c)](https://www.law.cornell.edu/cfr/text/42/493.43)[42 CFR Part 493.1235](https://www.law.cornell.edu/cfr/text/42/493.1235)[42 CFR Part 493.1251](https://www.law.cornell.edu/cfr/text/42/493.1251)[45 CFR Part 164.308](https://www.law.cornell.edu/cfr/text/45/164.308)[45 CFR Part 164.530](https://www.law.cornell.edu/cfr/text/45/164.530)[61 FR 38806, 9 CFR Part 417.5](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[A2LA C211 5.2](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 5.2](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[A2LA C223 5.7](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAFCO QA/QC Guidelines for Feed Laboratories Sec. 1.4 and 1.6](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL Sec. 5.2](https://www.aavld.org/accreditation-requirements-page)[AAVLD Requirements for an AVMDL Sec. 5.4.2.2](https://www.aavld.org/accreditation-requirements-page)[AAVLD Requirements for an AVMDL Appendix 1](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. B](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ACMG Technical Standards for Clinical Genetics Laboratories B3–B5](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ACMG Technical Standards for Clinical Genetics Laboratories C6.4](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[AIHA-LAP Policies 2022 (throughout)](https://www.aihaaccreditedlabs.org/policies)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 4.13.2.12](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.2.1.1–3](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 C-3-5](https://www.astm.org/e1578-18.html)[ASTM E1578-18 D-1-6](https://www.astm.org/e1578-18.html)[ASTM E1578-18 E-1-6](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.2.3–4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 7.1.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 9.3.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL), 6th Edition](https://www.cdc.gov/labs/BMBL.html)[CLSI QMS22 (throughout)](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[E.U. Annex 11-2](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Commission Directive 2003/94/EC Article 7.4](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[EPA 815-R-05-004 Chap. III, Sec. 10 and 17](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. IV, Sec. 1](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA QA/G-5 2.1.8](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2 - GAP 7.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, B3, C0, C1, C2, C3, C4, D, I, K - GMP 7](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 3.1](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS Food 7, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 3.1](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[IFS PACsecure 2, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 4.1.2.1](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.1.6](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.1.9](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 6.2.2](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.2.3](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.2.5](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.2.6](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[NYSDOH ELAP Medical Marijuana Microbiology Guidance](https://www.wadsworth.org/sites/default/files/WebDoc/MM%20guidance%20procedure%20for%20Micro%20iDOC-120320.pdf)[OECD GLP Principles 1.1.2](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[SQF FSC 9, Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.13.3)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 6.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.2.2](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **7.7** The system shall maintain training and certification records for personnel and allow the assignment of available training paths and certifications to specific personnel, such that only trained, certified, and experienced personnel—per state and local regulations—are able to perform assigned tasks. |  |
| [ASTM E1578-18 D-1-7](https://www.astm.org/e1578-18.html) | **7.8** The system shall allow individual modules and sections of the system (e.g., tables, forms) to be linked to one or more documents stored in the system. |  |
| [AAVLD Requirements for an AVMDL Sec. 4.3.4 and 4.3.5](https://www.aavld.org/accreditation-requirements-page)[EPA ERLN Laboratory Requirements 4.10.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **7.9** The system shall support the addition of accurate cross-references and page numbers to new documents. |  |
| [AAVLD Requirements for an AVMDL Sec. 4.3.4](https://www.aavld.org/accreditation-requirements-page) | **7.10** The system shall be capable of uniquely identifying documents created in and added to the system. |  |
| [APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf) | **7.11** The system shall provide both standard and 'ad hoc' means to query or search for documents, records, and other types of data and information in the system. |  |

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## 8. Personnel and resource management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [9 CFR Part 2.32](https://www.law.cornell.edu/cfr/text/9/2.32)[10 CFR Part 20.2103](https://www.law.cornell.edu/cfr/text/10/20.2103)[21 CFR Part 1.1150](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (c)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 110.10 (c)](https://www.law.cornell.edu/cfr/text/21/part-110)[21 CFR Part 120.12](https://www.law.cornell.edu/cfr/text/21/part-120)[21 CFR Part 123.10](https://www.law.cornell.edu/cfr/text/21/part-123)[29 CFR Part 1910.120](https://www.law.cornell.edu/cfr/text/29/1910.120)[29 CFR Part 1910.134 (m)](https://www.law.cornell.edu/cfr/text/29/1910.134)[29 CFR Part 1910.1030 (h-1)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1450 (j)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[40 CFR Part 262.207](https://www.law.cornell.edu/cfr/text/40/262.207)[A2LA C211 4.13.2.3](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 5.2](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[A2LA C223 5.7](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[ACMG Technical Standards for Clinical Genetics Laboratories B3–B5](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[BRC GSFS, Issue 8, 7.1.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 7.3.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CJIS Security Policy 5.2.3](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EPA ERLN Laboratory Requirements 4.2.4.1](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.1.8](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2 - GAP 7.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, B3, C0, C1, C2, C3, C4, D, I, K - GMP 7](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 3.1](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS Food 7, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 3.1](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[IFS PACsecure 2, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[NIST 800-53, Rev. 5, AT-3 and -4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OSHA 1910.1020 (throughout)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1020)[OSHA 1910.1200(b)(3) and (h)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200)[OSHA 1910.1450 (throughout)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1450)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[SQF FSC 9, Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.2)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 6.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Sampling Procedures for PDP 6.1.2.8 and 6.1.3](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.2.2](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #996, Annex 5, 8.1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **8.1** The system shall have the ability to create and maintain individual personnel records for tracking such things as demographics, certifications, training, evaluations, medical history, and occupational exposure. |  |
| [21 CFR Part 820.198](https://www.law.cornell.edu/cfr/text/21/820.198)[42 CFR Part 493.1233](https://www.law.cornell.edu/cfr/text/42/493.1233)[BRC GSFS, Issue 8, 3.10.1–2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[E.U. Commission Directive 2003/94/EC Article 13](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 21](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 5.8](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.8](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.8)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[WADA International Standard for Laboratories (ISL) 5.3.10](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 2.1 (j)](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 5.0](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **8.2** The system shall allow authorized personnel to document complaints and problems reported to the laboratory or production facility. |  |
| [5 CFR Part 930.301](https://www.law.cornell.edu/cfr/text/5/930.301)[7 CFR Part 331.15](https://www.law.cornell.edu/cfr/text/7/331.15)[9 CFR Part 121.15](https://www.law.cornell.edu/cfr/text/9/121.15)[21 CFR Part 120.12](https://www.law.cornell.edu/cfr/text/21/part-120)<https://www.law.cornell.edu/cfr/text/21/part-123> 21 CFR Part 123.10][21 CFR Part 211.25](https://www.law.cornell.edu/cfr/text/21/211.25)[29 CFR Part 1910.1450 (f)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[42 CFR Part 73.15](https://www.law.cornell.edu/cfr/text/42/73.15)[A2LA C223 5.2](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.9.3.3](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 E-1-1](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 7.1.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CJIS Security Policy 5.2.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EPA ERLN Laboratory Requirements 4.2.4.1](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[FDA Hazard Analysis Critical Control Point Guidelines](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2 - GAP 7.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, B3, C0, C1, C2, C3, C4, D, I, K - GMP 7](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[NIST 800-53, Rev. 5, AT-2 and AT-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, CP-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IR-2](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[SQF FSC 9, Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.2)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Sampling Procedures for PDP 6.1.2–3](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #986, Annex 2, 10](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **8.3** The system shall allow training sessions and reviews to be scheduled for personnel. |  |
| [5 CFR Part 930.301](https://www.law.cornell.edu/cfr/text/5/930.301)[29 CFR Part 1910.1450 (f)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[ABFT Accreditation Manual Sec. B](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.2.7](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 E-1-2](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 7.1.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[FDA Hazard Analysis Critical Control Point Guidelines](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[SQF FSC 9, Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf) | **8.4** The system should provide access to relevant training materials to personnel attending training sessions. |  |
| [5 CFR Part 930.301](https://www.law.cornell.edu/cfr/text/5/930.301)[21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 110.10 (c)](https://www.law.cornell.edu/cfr/text/21/part-110)[21 CFR Part 120.12](https://www.law.cornell.edu/cfr/text/21/part-120)[21 CFR Part 123.10](https://www.law.cornell.edu/cfr/text/21/part-123)[29 CFR Part 1910.1450 (f)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[40 CFR Part 262.207](https://www.law.cornell.edu/cfr/text/40/262.207)[A2LA C223 5.2](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[ACMG Technical Standards for Clinical Genetics Laboratories C6.3](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 4.13.2.12](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.2.1.1–3](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.2.6.2](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.9.3.3 and 5.9.3.5](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 E-1-3](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 7.1.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL), 6th Edition](https://www.cdc.gov/labs/BMBL.html)[CJIS Security Policy 5.2.3](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EPA ERLN Laboratory Requirements 4.2.4.1](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.1.8](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Commission Directive 2003/94/EC Article 7.4](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[FDA Hazard Analysis Critical Control Point Guidelines](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines)[IFS Food 7, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 5.1.9](https://www.iso.org/standard/56115.html)[NIST 800-53, Rev. 5, AT-2–AT-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, CP-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IR-2](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[SQF FSC 9, Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.2)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 6.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 12.4e](https://www.ams.usda.gov/services/lab-testing/lab-approval)[USDA Sampling Procedures for PDP 6.1.2.8 and 6.1.3](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.2.2](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 2.1 (e)](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 9.4](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 10](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **8.5** The system shall be able to record for every trainee their training attendance, progress, assessments, licenses, and certificates of completion for in-house training, continuing education courses, and other required courses of certification. |  |
| [ABFT Accreditation Manual Sec. B](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1578-18 E-1-4](https://www.astm.org/e1578-18.html)[IFS Food 7, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 3.3](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf) | **8.6** The system should allow the results of tests taken by personnel to be uploaded and made available to authorized individuals for reference. |  |
| [ASTM E1578-18 E-1-5](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 7.1.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[NIST 800-53, Rev. 5, AT-2 and AT-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, CP-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IR-2](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[SQF FSC 9, Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.9](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf) | **8.7** The system should be able to produce a training matrix of personnel. |  |
| [7 CFR Part 331.15](https://www.law.cornell.edu/cfr/text/7/331.15)[9 CFR Part 121.10](https://www.law.cornell.edu/cfr/text/9/121.10)[9 CFR Part 121.15](https://www.law.cornell.edu/cfr/text/9/121.15)[21 CFR Part 11.10 (i)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 58.29](https://www.law.cornell.edu/cfr/text/21/58.29)[21 CFR Part 1.1150](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 211.25](https://www.law.cornell.edu/cfr/text/21/211.25)[21 CFR Part 225.10](https://www.law.cornell.edu/cfr/text/21/225.10)[21 CFR Part 226.10](https://www.law.cornell.edu/cfr/text/21/226.10)[21 CFR Part 226.40](https://www.law.cornell.edu/cfr/text/21/226.40)[21 CFR Part 820.25](https://www.law.cornell.edu/cfr/text/21/820.25)[29 CFR Part 1910.1030 (g-2)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1030 (h-2)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1200 (h)](https://www.law.cornell.edu/cfr/text/29/1910.1200)[29 CFR Part 1910.1450 (e)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[42 CFR Part 73.10](https://www.law.cornell.edu/cfr/text/42/73.10)[42 CFR Part 73.15](https://www.law.cornell.edu/cfr/text/42/73.15)[42 CFR Part 493.43 (c)](https://www.law.cornell.edu/cfr/text/42/493.43)[42 CFR Part 493.1235](https://www.law.cornell.edu/cfr/text/42/493.1235)[45 CFR Part 164.308](https://www.law.cornell.edu/cfr/text/45/164.308)[45 CFR Part 164.530](https://www.law.cornell.edu/cfr/text/45/164.530)[61 FR 38806, 9 CFR Part 310.25](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[61 FR 38806, 9 CFR Part 381.94](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[A2LA C223 5.2](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAFCO QA/QC Guidelines for Feed Laboratories Sec. 1.4 and 1.6](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL Sec. 5.2](https://www.aavld.org/accreditation-requirements-page)[AAVLD Requirements for an AVMDL Sec. 5.4.2.2](https://www.aavld.org/accreditation-requirements-page)[AAVLD Requirements for an AVMDL Appendix 1](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. B](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[AIHA-LAP Policies 2022 (various parts)](https://www.aihaaccreditedlabs.org/policies)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 4.13.2.12](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.2.1.1–3](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 C-3-5](https://www.astm.org/e1578-18.html)[ASTM E1578-18 D-1-6](https://www.astm.org/e1578-18.html)[ASTM E1578-18 E-1-6](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.2.3–4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 9.3.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[E.U. Annex 11-2](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[EPA 815-R-05-004 Chap. III, Sec. 10 and 17](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. IV, Sec. 1](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA QA/G-5 2.1.8](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[ISO 15189:2012 4.1.2.1](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.1.6](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.1.9](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 6.2.2](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.2.3](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.2.5](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.2.6](https://www.iso.org/standard/66912.html)[OECD GLP Principles 1.1.2](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[USDA Administrative Procedures for the PDP 6.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **8.8** The system shall map available system tasks (such as approved test methods) or sample types (such as select agents, toxins, or substrates/matrices) to available training paths and certifications, such that only trained, certified, and experienced personnel are able to perform assigned tasks. |  |
| Currently no regulatory- or standard-based requirement for this and thus not in the original LIMSpec | **8.9** The system should provide accounting and billing functionality, including quoting and invoicing, for not only optimal business operations but also to ensure compliance with any regulations involving monetary transactions for cannabis-related services. |  |

## 9. Compliance management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [7 CFR Part 331.17](https://www.law.cornell.edu/cfr/text/7/331.17)[9 CFR Part 121.17](https://www.law.cornell.edu/cfr/text/9/121.17)[21 CFR Part 11.10 (e)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 11.70](https://www.law.cornell.edu/cfr/text/21/11.70)[21 CFR Part 58.130 (e)](https://www.law.cornell.edu/cfr/text/21/58.130)[42 CFR Part 73.17](https://www.law.cornell.edu/cfr/text/42/73.17)[42 CFR Part 493.1251 (d)](https://www.law.cornell.edu/cfr/text/42/493.1251)[61 FR 38806, 9 CFR Part 310.25](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[61 FR 38806, 9 CFR Part 381.94](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[ASTM E1578-18 C-4-7](https://www.astm.org/e1578-18.html)[ASTM E1578-18 E-2-1](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.3.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[EPA ERLN Laboratory Requirements 4.9.1 and 4.9.7](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[E.U. Annex 11-9](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[OECD GLP Principles 8.3.5](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[USDA Data and Instrumentation for PDP 8.1.3](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **9.1** The system shall accurately and consistently capture and add a time and date to created electronic records, as well as any modifications made to them. The system shall also prompt the user to enter a mandatory reason for any change made to a record. |  |
| [21 CFR Part 11.10 (e)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 11.70](https://www.law.cornell.edu/cfr/text/21/11.70)[21 CFR Part 58.130 (e)](https://www.law.cornell.edu/cfr/text/21/58.130)[21 CFR Part 211.68](https://www.law.cornell.edu/cfr/text/21/211.68)[21 CFR Part 211.100](https://www.law.cornell.edu/cfr/text/21/211.100)[21 CFR Part 211.160 (a)](https://www.law.cornell.edu/cfr/text/21/211.160)[21 CFR Part 211.188](https://www.law.cornell.edu/cfr/text/21/211.188)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[45 CFR Part 170.315 (d)](https://www.law.cornell.edu/cfr/text/45/170.315)[ASTM E1578-18 E-2-2](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.4.1.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy Appendix G.5](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[EPA ERLN Laboratory Requirements 4.9.1 and 4.9.7](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[E.U. Annex 11-9](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Annex 11-12.4](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Commission Directive 2003/94/EC Article 9.2](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[NIST 800-53, Rev. 5, AC-2(4) and AC-6(9)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, AU-2 and AU-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, CM-5(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[OECD GLP Principles 8.3.5](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.13.3)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[WHO Technical Report Series, #986, Annex 2, 15.7 and 15.9](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #996, Annex 5 (throughout)](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **9.2** The system shall document in the audit trail any event—including administrative and privileged functions—that creates, modifies, and deletes data, including user accounts, passwords, files, directories, logs, and other system resources. |  |
| [21 CFR Part 11.10 (e)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 11.70](https://www.law.cornell.edu/cfr/text/21/11.70)[21 CFR Part 58.130 (e)](https://www.law.cornell.edu/cfr/text/21/58.130)[21 CFR Part 211.68](https://www.law.cornell.edu/cfr/text/21/211.68)[21 CFR Part 211.100](https://www.law.cornell.edu/cfr/text/21/211.100)[21 CFR Part 211.160 (a)](https://www.law.cornell.edu/cfr/text/21/211.160)[21 CFR Part 211.188](https://www.law.cornell.edu/cfr/text/21/211.188)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[42 CFR Part 493.1274](https://www.law.cornell.edu/cfr/text/42/493.1274)[45 CFR Part 170.315 (d)](https://www.law.cornell.edu/cfr/text/45/170.315)[ASTM E1578-18 E-2-3](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.2.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CJIS Security Policy 5.4.1.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.2.3.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[CLSI QMS22 2.4.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[E.U. Annex 11-12.4](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Commission Directive 2003/94/EC Article 9.2](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[NIST 800-53, Rev. 5, AU-3 and AU-8](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[OECD GLP Principles 8.3.5](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[USDA Data and Instrumentation for PDP 8.1.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #986, Annex 2, 15.7 and 15.9](https://extranet.who.int/prequal/content/who-technical-report-series) | **9.3** The system's audit trail shall document the date, time, and user associated with a given event, as well as whether the event succeeded or failed. |  |
| [21 CFR Part 11.10 (e)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 11.70](https://www.law.cornell.edu/cfr/text/21/11.70)[21 CFR Part 58.130 (e)](https://www.law.cornell.edu/cfr/text/21/58.130)[21 CFR Part 211.68](https://www.law.cornell.edu/cfr/text/21/211.68)[21 CFR Part 211.100](https://www.law.cornell.edu/cfr/text/21/211.100)[21 CFR Part 211.160 (a)](https://www.law.cornell.edu/cfr/text/21/211.160)[21 CFR Part 211.188](https://www.law.cornell.edu/cfr/text/21/211.188)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[45 CFR Part 170.315 (d)](https://www.law.cornell.edu/cfr/text/45/170.315)[ASTM E1578-18 E-2-4](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.8.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Commission Directive 2003/94/EC Article 9.2](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[ICH GCP 4.9.0 and 4.9.3](https://ichgcp.net/)[NIST 800-53, Rev. 5, AU-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[OECD GLP Principles 8.3.5](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[WHO Technical Report Series, #986, Annex 2, 15.7 and 15.9](https://extranet.who.int/prequal/content/who-technical-report-series) | **9.4** The system's audit trail shall document the previous and current value of a modified field. |  |
| [21 CFR Part 11.10 (e)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 11.70](https://www.law.cornell.edu/cfr/text/21/11.70)[21 CFR Part 58.130 (e)](https://www.law.cornell.edu/cfr/text/21/58.130)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[42 CFR Part 493.1251 (d)](https://www.law.cornell.edu/cfr/text/42/493.1251)[45 CFR Part 164.310](https://www.law.cornell.edu/cfr/text/45/164.310)[ASTM E1578-18 E-2-5](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.8.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[OECD GLP Principles 8.3.5](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm) | **9.5** The system shall provide electronic signature support to users who require the review, approval, rejection, modification, or disposition of a record. |  |
| [21 CFR Part 11.70](https://www.law.cornell.edu/cfr/text/21/11.70)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf) | **9.6** The system shall prevent a user from copying and pasting the electronic signature of another user. |  |
| [21 CFR Part 11.10 (e)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 58.130 (e)](https://www.law.cornell.edu/cfr/text/21/58.130)[42 CFR Part 493.1274 (d)](https://www.law.cornell.edu/cfr/text/42/493.1274)[E.U. Annex 11-9](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[NIST 800-53, Rev. 5, AU-6 and AU-12](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[OECD GLP Principles 8.3.5](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm) | **9.7** The system shall be able to generate a complete and accurate copy of the audit trail in a human-readable and printable format. |  |
| [ISO/IEC 17025:2017](https://www.iso.org/standard/66912.html) | **9.8** The system should support a laboratory's ISO/IEC 17025:2017 compliance efforts. (See *LIMSpec for Cannabis Testing* 1.13, 2.8, 4.4, 6.5, 6.9, 7.1, 7.2, 7.3, 7.5, 7.6, 7.7, 8.8, 10.7, 10.9, 10.10, 10.11, 10.13, 10.15, 16.3, 18.3, 18.4, 18.11, 21.9, 21.11, 22.4, 23.22, 24.4, 24.5, and 25.7 for the specific ISO/IEC 17025:2017-supported requirements.) |  |
| [NELAC *Volume 1: Management and Technical Requirements for Laboratories Performing Environmental Analysis* (2016)](https://nelac-institute.org/content/CSDP/standards.php)[NYS ELAP Certification](https://www.wadsworth.org/regulatory/elap/requirements-for-laboratory-certification-certification) | **9.9** The system should support a laboratory's NELAC or ELAP compliance efforts. |  |
| [A2LA *R243 - Specific Requirements - Cannabis Testing Laboratory Accreditation Program*](https://www.a2la.org/accreditation/cannabis-testing) | **9.10** The system should support a laboratory's Americans for Safe Access (ASA) Patient Focused Certification (PFC) Program laboratory compliance efforts. |  |

## 10. Instrument and equipment management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 E-3-1](https://www.astm.org/e1578-18.html) | **10.1** The system should provide a means for tracking usage of laboratory equipment and instruments. |  |
| [ASTM E1578-18 E-3-2](https://www.astm.org/e1578-18.html) | **10.2** The system shall provide a means for planning the use of and reserving equipment and instruments. |  |
| [ASTM E1578-18 E-3-3](https://www.astm.org/e1578-18.html) | **10.3** The system shall be able to bring an instrument online and take an instrument offline both manually and via a configurable scheduler. |  |
| [ASTM E1578-18 E-3-4](https://www.astm.org/e1578-18.html) | **10.4** The system should record instrument usage time to assist laboratory personnel with capacity planning and scheduling. |  |
| [ASTM E1578-18 E-3-5](https://www.astm.org/e1578-18.html) | **10.5** The system shall allow users to configure and record multiple instrument events for the same instrument, including different event types and different frequencies for the same event type. |  |
| [ASTM E1578-18 E-3-6](https://www.astm.org/e1578-18.html) | **10.6** The system shall be able to group instruments together in specific ways, including by type and laboratory location. |  |
| [21 CFR Part 110.40 (f)](https://www.law.cornell.edu/cfr/text/21/part-110)[21 CFR Part 211.67–68](https://www.law.cornell.edu/cfr/text/21/211.67)[21 CFR Part 211.160 (b-4)](https://www.law.cornell.edu/cfr/text/21/211.160)[21 CFR Part 212.30 (b)](https://www.law.cornell.edu/cfr/text/21/212.30)[21 CFR Part 212.60 (e)](https://www.law.cornell.edu/cfr/text/21/212.60)[21 CFR Part 225.30 (b-4)](https://www.law.cornell.edu/cfr/text/21/225.30)[21 CFR Part 606.60](https://www.law.cornell.edu/cfr/text/21/606.60)[21 CFR Part 820.70 (g)](https://www.law.cornell.edu/cfr/text/21/820.70)[21 CFR Part 820.72](https://www.law.cornell.edu/cfr/text/21/820.72)[42 CFR Part 493.1252 (b-3)](https://www.law.cornell.edu/cfr/text/42/493.1252)[42 CFR Part 493.1255](https://www.law.cornell.edu/cfr/text/42/493.1255)[A2LA C211 5.5.2](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 5.5](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAFCO QA/QC Guidelines for Feed Laboratories Sec. 2](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL Sec. 5.5](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. E-20](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ACMG Technical Standards for Clinical Genetics Laboratories C1.5](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.6.1.1](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[AIHA-LAP Policies 2022 2C.3.7–2C.3.10](https://www.aihaaccreditedlabs.org/policies)[ASTM E1578-18 E-3-7](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 6.4.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.6.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA 815-R-05-004 Chap. IV, Sec. 7](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.11.11–13](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.6–7](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 17.2](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, B3, C0, C1, C2, C3, C4, D, I, K - GMP 19](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 5.4.2](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.4.2](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 5.3.1.4](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 6.4.7](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.4.8](https://www.iso.org/standard/66912.html)[ISO/TS 22002-4:2013, 4.7.1](https://www.iso.org/standard/60969.html)[ISO/TS 22002-6:2016, 4.7](https://www.iso.org/standard/66126.html)[NIST 800-53, Rev. 5, MA-2 and MA-2(2)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[SQF FSC 9, Food Manufacturing, Part B, 11.2.3.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 4.2.3.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 13.2.3.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[USDA Administrative Procedures for the PDP 5.2.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Data and Instrumentation for PDP 5.2](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Data and Instrumentation for PDP 6](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.2.4](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 13.5](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 16.23](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **10.7** The system shall allow for the configuration of calibration and maintenance frequency and time frames for—as well as the manual and automatic scheduling of calibration or maintenance of—equipment, instruments, and systems. Available intervals should include days, weeks, months, and years. |  |
| [21 CFR Part 225.30 (b-4)](https://www.law.cornell.edu/cfr/text/21/225.30)[AAVLD Requirements for an AVMDL Sec. 5.5.9](https://www.aavld.org/accreditation-requirements-page)[ASTM E1578-18 E-3-8](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 6.4.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 17.2](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 5.4.2](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.4.2](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[WHO Technical Report Series, #986, Annex 2, 16.23](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **10.8** The system shall provide clear alerts or notifications when an instrument nears its calibration due date. |  |
| [21 CFR Part 211.160 (b-4)](https://www.law.cornell.edu/cfr/text/21/211.160)[A2LA C211 5.5.7](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 5.6](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[ABFT Accreditation Manual Sec. E-21](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1578-18 E-3-9](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 6.4.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CLSI QMS22 2.1.2.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[IFS Food 7, Part 2, 5.4.3](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.4.3](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 5.3.1.5](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 6.4.9](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[SQF FSC 9, Food Manufacturing, Part B, 11.2.3.4](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 4.2.3.4](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 13.2.3.4](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.5.7)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[WHO Technical Report Series, #986, Annex 2, 13.10](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **10.9** The system shall clearly identify any instrument that is out-of-calibration, beyond its preventative maintenance due date, or under investigation and prevent it from being selected for use. |  |
| [21 CFR Part 111.117](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 820.72 (b-2)](https://www.law.cornell.edu/cfr/text/21/820.72)[ASTM E1578-18 E-3-10](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 6.4.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[EPA ERLN Laboratory Requirements 4.11.11–13](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.6–7](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[ISO/IEC 17025:2017 6.4.8](https://www.iso.org/standard/66912.html)[NIST 800-53, Rev. 5, MA-2, MA-2(2), and MA-6(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[WHO Technical Report Series, #986, Annex 2, 16.23](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **10.10** The system shall be able to show all instances of scheduled calibration, preventative maintenance, and service dates for an instrument. |  |
| [21 CFR Part 820.72 (b-1)](https://www.law.cornell.edu/cfr/text/21/820.72)[42 CFR Part 493.1255](https://www.law.cornell.edu/cfr/text/42/493.1255)[A2LA C211 5.6.2.1](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 5.6](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAVLD Requirements for an AVMDL Sec. 5.6.1–2](https://www.aavld.org/accreditation-requirements-page)[AIHA-LAP Policies 2022 2C.3.7 and Appendix H5.1-5.3](https://www.aihaaccreditedlabs.org/policies)[BRC GSFS, Issue 8, 6.4.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[EPA 815-R-05-004 Chap. IV, Sec. 7](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 17.2](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[ISO/IEC 17025:2017 6.5](https://www.iso.org/standard/66912.html)[ISO/TS 22002-4:2013, 4.7.1](https://www.iso.org/standard/60969.html)[ISO/TS 22002-6:2016, 4.7](https://www.iso.org/standard/66126.html)[OECD GLP Principles 4.2](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[SQF FSC 9, Food Manufacturing, Part B, 11.2.3.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 4.2.3.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 13.2.3.2](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.6.2.1 and 5.6.4.1)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Data and Instrumentation for PDP 6.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **10.11** The system shall be able to link a calibration activity to certified reference material or designated measurement processes. |  |
| [ASTM E1578-18 E-3-11](https://www.astm.org/e1578-18.html) | **10.12** The system shall support the use of predefined intervals when calculating instrument event dates. |  |
| [21 CFR Part 110.40 (f)](https://www.law.cornell.edu/cfr/text/21/part-110)[21 CFR Part 211.105 (b)](https://www.law.cornell.edu/cfr/text/21/211.105)[42 CFR Part 493.1255](https://www.law.cornell.edu/cfr/text/42/493.1255)[A2LA C211 5.5.4 and 5.5.5](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[AAVLD Requirements for an AVMDL Sec. 5.5.4–5](https://www.aavld.org/accreditation-requirements-page)[ASTM E1578-18 E-3-12](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 6.4.x](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[EPA 815-R-05-004 Chap. IV, Sec. 7](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA QA/G-5 2.2.6–7](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 17.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 5.4.1](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.4.1](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 5.3.1.7](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 6.4.8](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.4.13](https://www.iso.org/standard/66912.html)[NIST 800-53, Rev. 5, CM-8](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[SQF FSC 9, Food Manufacturing, Part B, 11.2.3.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 4.2.3.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 13.2.3.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.5)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 7.2](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 12.4j](https://www.ams.usda.gov/services/lab-testing/lab-approval)[WADA International Standard for Laboratories (ISL) 4.2.1 and 5.2.4](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #961, Annex 13, 6.1](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **10.13** The system shall be able to uniquely identify each instrument and any associated components and maintain that and other information—such as manufacturer, model number, serial number, and calibration and maintenance history—within the system. |  |
| [ASTM E1578-18 E-3-13](https://www.astm.org/e1578-18.html) | **10.14** The system shall be able to automatically take a parent instrument offline when a child instrument or component goes offline. |  |
| [10 CFR Part 20.2103](https://www.law.cornell.edu/cfr/text/10/20.2103)[21 CFR Part 58.63](https://www.law.cornell.edu/cfr/text/21/58.63)[21 CFR Part 111.117](https://www.law.cornell.edu/cfr/text/21/part-111)[21 CFR Part 211.67–68](https://www.law.cornell.edu/cfr/text/21/211.67)[21 CFR Part 211.160 (b-4)](https://www.law.cornell.edu/cfr/text/21/211.160)[21 CFR Part 211.182](https://www.law.cornell.edu/cfr/text/21/211.182)[21 CFR Part 211.194 (d)](https://www.law.cornell.edu/cfr/text/21/211.194)[21 CFR Part 212.30 (b)](https://www.law.cornell.edu/cfr/text/21/212.30)[21 CFR Part 212.60 (e)](https://www.law.cornell.edu/cfr/text/21/212.60)[21 CFR Part 820.70 (g)](https://www.law.cornell.edu/cfr/text/21/820.70)[21 CFR Part 820.72](https://www.law.cornell.edu/cfr/text/21/820.72)[42 CFR Part 493.1254](https://www.law.cornell.edu/cfr/text/42/493.1254)[42 CFR Part 493.1255](https://www.law.cornell.edu/cfr/text/42/493.1255)[A2LA C211 4.13.2.1](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C211 5.5.2](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C211 5.10.4](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[AAFCO QA/QC Guidelines for Feed Laboratories Sec. 2](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL Sec. 5.5](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. E-20 and -23](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ABFT Accreditation Manual Sec. F-1 and I-1](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[AIHA-LAP Policies 2022 2C.3.7–2C.3.10](https://www.aihaaccreditedlabs.org/policies)[ASTM E1578-18 E-3-14](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.2.2.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA 815-R-05-004 Chap. IV, Sec. 7](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.11.11–13](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.6–7](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[GFSI Benchmarking Rqmts., v2020.1, Part 3, B3, C0, C1, C2, C3, C4, D, I, K - GMP 19](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 5.4.2](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 5.4.2](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 5.3.1.4](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 6.4.4](https://www.iso.org/standard/66912.html)[NIST 800-53, Rev. 5, MA-2, MA-2(2), and MA-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OECD GLP Principles 4.2](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[SQF FSC 9, Food Manufacturing, Part B, 11.2.3.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Food Manufacturing, Part B, 11.2.3.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 4.2.3.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 4.2.3.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 13.2.3.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 13.2.3.6](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.5)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 5.2.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Data and Instrumentation for PDP 5.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 12.4c](https://www.ams.usda.gov/services/lab-testing/lab-approval)[WADA International Standard for Laboratories (ISL) 5.2.4](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 15.46](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 16.23](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **10.15** The system shall be capable of chronologically logging details for scheduled and unscheduled calibration and maintenance activities for each instrument, including calibration status, calibration standard, date and time of calibration or maintenance, work performed, who conducted it, and signatures of those verifying the completed activities. |  |

## 11. Batch and lot management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 58.105 (a)](https://www.law.cornell.edu/cfr/text/21/58.105)[21 CFR Part 211.80](https://www.law.cornell.edu/cfr/text/21/211.80)[21 CFR Part 225.102](https://www.law.cornell.edu/cfr/text/21/225.102)[21 CFR Part 226.102](https://www.law.cornell.edu/cfr/text/21/226.102)[ASTM E1578-18 E-4-1](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 3.3](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.10.1](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[OECD GLP Principles 6.2](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm) | **11.1** The system shall provide a means for organizing samples or processes into identifiable batches based upon pre-defined criteria. |  |
| [21 CFR Part 211.80](https://www.law.cornell.edu/cfr/text/21/211.80)[21 CFR Part 225.102](https://www.law.cornell.edu/cfr/text/21/225.102)[21 CFR Part 226.102](https://www.law.cornell.edu/cfr/text/21/226.102)[ASTM E1578-18 E-4-2](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.10.1](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **11.2** The system shall maintain the links between component parts of a batch and track the batch throughout the system. |  |
| [21 CFR Part 211.80](https://www.law.cornell.edu/cfr/text/21/211.80)[21 CFR Part 225.102](https://www.law.cornell.edu/cfr/text/21/225.102)[21 CFR Part 226.102](https://www.law.cornell.edu/cfr/text/21/226.102)[21 CFR Part 820.65](https://www.law.cornell.edu/cfr/text/21/820.65)[ASTM E1578-18 E-4-3](https://www.astm.org/e1578-18.html) | **11.3** The system shall allow for identifying a batch as a unique entity that can be quality controlled in the same way as, e.g., a single sample. |  |
| [ASTM E1578-18 E-4-4](https://www.astm.org/e1578-18.html) | **11.4** The system should provide a means for determining the effectiveness of a process and designate the disposition of a batch based on study or experiment results. |  |
| [E.U. Annex 11-15](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf) | **11.5** The system shall allow only authorized personnel to certify the release of batches, requiring an electronic signature to do so. |  |

## 12. Scheduled event management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 129.80 (g)](https://www.law.cornell.edu/cfr/text/21/part-129)[ASTM E1578-18 E-5-1](https://www.astm.org/Standards/E1578.htm)[USDA Sampling Procedures for PDP 5.6–7](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **12.1** The system shall allow users to create, maintain, and revise schedules—and any associated due dates—for various laboratory tasks and processes, while making scheduled tasks easy to monitor from one system location, e.g., using a dashboard. |  |
| [21 CFR Part 212.61 (a)](https://www.law.cornell.edu/cfr/text/21/212.61)[21 CFR Part 211.166 (b)](https://www.law.cornell.edu/cfr/text/21/211.166)[ASTM E1578-18 E-5-2](https://www.astm.org/Standards/E1578.htm) | **12.2** The system scheduler shall be capable of working with a variety of laboratory tasks and experiments, such as calibrations, maintenance, and stability studies. |  |
| [ASTM E1578-18 E-5-3](https://www.astm.org/Standards/E1578.htm) | **12.3** The system scheduler shall automatically create a sample number specifically for recording the results of calibration, validation, and maintenance. |  |
| [ASTM E1578-18 E-5-4](https://www.astm.org/Standards/E1578.htm) | **12.4** The system shall be capable of handling industry-specific testing characteristics (e.g., randomized representative sampling, substrate-specific test schedules) for scheduled analyses. |  |
| [ASTM E1578-18 E-5-5](https://www.astm.org/Standards/E1578.htm) | **12.5** The system shall provide a means for setting a standard or reagent's retest date based on a retest interval. |  |
| Currently no regulatory- or standard-based requirement for this and thus not in the original LIMSpec | **12.6** The system shall provide a means for configuring notifications and alerts for incomplete tasks nearing their due date. |  |

## 13. Instrument data capture and control

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 E-6-1](https://www.astm.org/Standards/E1578.htm) | **13.1** The system shall be able to trigger an instrument event after a definable number of uses of that instrument. |  |
| [ASTM E1578-18 E-6-2](https://www.astm.org/Standards/E1578.htm) | **13.2** The system shall be able to automatically take an instrument offline when an instrument's calibration or maintenance date passes without calibration or maintenance taking place. |  |
| [ASTM E1578-18 E-6-3](https://www.astm.org/Standards/E1578.htm) | **13.3** The system should allow auto samplers and other robotic systems to be controlled via an application programming interface or web services. |  |
| [ASTM E1578-18 E-6-4](https://www.astm.org/Standards/E1578.htm) | **13.4** The system should accurately record instrument information, personnel names, dates, and times relating to entered results or determinations. |  |
| [ASTM E1578-18 E-6-5](https://www.astm.org/Standards/E1578.htm) | **13.5** The system should be able to accept the results uploaded from an interfaced instrument. |  |
| [ASTM E1578-18 E-6-6](https://www.astm.org/Standards/E1578.htm) | **13.6** The system should be capable of sending sample sequences (e.g., control samples, standards) to an instrument that is bidirectionally interfaced. |  |
| [ASTM E1578-18 E-6-7](https://www.astm.org/Standards/E1578.htm) | **13.7** The system should provide a means to interface with simple laboratory instruments using technologies such as RS-232, TCP/IP, and USB. |  |
| [ASTM E1578-18 E-6-8](https://www.astm.org/Standards/E1578.htm) | **13.8** The system should support industry communication standards like Specification E1394 and Health Level 7 for bidirectional communication with laboratory instrumentation software. |  |

## 14. Standard and reagent management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 58.83](https://www.law.cornell.edu/cfr/text/21/58.83)[29 CFR Part 1910.1200 (g)](https://www.law.cornell.edu/cfr/text/29/1910.1200)[29 CFR Part 1910.1450 (h)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[42 CFR Part 493.1252 (c)](https://www.law.cornell.edu/cfr/text/42/493.1252)[ABFT Accreditation Manual Sec. E-17](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1578-18 E-7-1](https://www.astm.org/e1578-18.html)[ISO 15189:2012 5.3.2.4–5](https://www.iso.org/standard/56115.html)[OECD GLP Principles 4.4](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm) | **14.1** The system shall allow for accurate inventory management of all standards, reagents, and consumables used for laboratory testing. The system shall also be able to link manufacturer documents such as material safety data sheets and in-house instructions to their respective materials. |  |
| [7 CFR Part 331.3](https://www.law.cornell.edu/cfr/text/7/331.3)[9 CFR Part 121.3](https://www.law.cornell.edu/cfr/text/9/121.3)[21 CFR Part 312.58 (b)](https://www.law.cornell.edu/cfr/text/21/312.58)[42 CFR Part 73.3–4 (c)](https://www.law.cornell.edu/cfr/text/42/73.3)[ASTM E1578-18 E-7-2](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.1.12](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[ISO 15189:2012 5.3.2.4](https://www.iso.org/standard/56115.html)[WHO Technical Report Series, #986, Annex 2, 12.20](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **14.2** The inventory system shall allow a material to be clearly identified as a controlled, regulated, or hazardous substance and flagged based on its physical and/or chemical stability. |  |
| [ASTM E1578-18 E-7-3](https://www.astm.org/e1578-18.html)[ISO 15189:2012 5.3.2.4](https://www.iso.org/standard/56115.html) | **14.3** The system shall be capable of tracking standard and reagent consumption and expiration such that a list of items nearing reorder level or expiration date can be produced on demand. |  |
| [ASTM E1578-18 E-7-4](https://www.astm.org/e1578-18.html)[ISO 15189:2012 5.3.2.4](https://www.iso.org/standard/56115.html) | **14.4** The system should be capable of tracking standards and volumetric solutions created in-house such that concentration, purity, and molarity factor are recorded and made available during calculation of results. |  |
| [ASTM E1578-18 E-7-5](https://www.astm.org/e1578-18.html)[ISO 15189:2012 5.3.2.4](https://www.iso.org/standard/56115.html) | **14.5** The system shall be capable of applying review statuses to a standard or reagent's properties, also requiring additional review if properties such as vendor lot number or expiration date are changed. |  |

## 15. Inventory management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 E-8-1](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards) | **15.1** The system should be capable of accurately tracking the specific quantities of received and consumed test samples and specimens. |  |
| [21 CFR Part 212.60 (d)](https://www.law.cornell.edu/cfr/text/21/212.60)[ASTM E1578-18 E-8-2](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.1.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards) | **15.2** The system should support the recording of inventory items' attributes, including chemical name, internal name, catalog number, reorder level, consumable or reusable status, and expiration date. |  |
| [21 CFR Part 211.84](https://www.law.cornell.edu/cfr/text/21/211.84)[21 CFR Part 211.101](https://www.law.cornell.edu/cfr/text/21/211.101)[21 CFR Part 212.60 (d)](https://www.law.cornell.edu/cfr/text/21/212.60)[21 CFR Part 226.80](https://www.law.cornell.edu/cfr/text/21/226.80)[21 CFR Part 606.120 (b)](https://www.law.cornell.edu/cfr/text/21/606.120)[29 CFR Part 1910.1030 (g)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[29 CFR Part 1910.1096 (e-6)](https://www.law.cornell.edu/cfr/text/29/1910.1096)[29 CFR Part 1910.1200 (f-6) and (f-10)](https://www.law.cornell.edu/cfr/text/29/1910.1200)[40 CFR Part 262.206](https://www.law.cornell.edu/cfr/text/40/262.206)[ASTM E1578-18 E-8-3](https://www.astm.org/e1578-18.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OSHA 1910.1200(b)(3) and (f)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200)[OSHA 1910.1450(h)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1450)[WHO Technical Report Series, #986, Annex 2, 14.13, 14.35, and 14.41](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 15.10–12](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **15.3** The system should be capable of designing and printing labels in a variety of sizes, formats, and inventory categories. |  |
| [21 CFR Part 117.420](https://www.law.cornell.edu/cfr/text/21/part-117)[21 CFR Part 212.40 (c)](https://www.law.cornell.edu/cfr/text/21/212.40)[21 CFR Part 820.50](https://www.law.cornell.edu/cfr/text/21/820.50)[A2LA C211 4.6](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASTM E1578-18 E-8-4](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.5.1.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[Codex Alimentarius CXC 1-1969, Ch.1, 7.2.8](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXC%2B1-1969%252FCXC_001e.pdf)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, I, K - FSM 13.2.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, D - FSM 13.2.2](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, I - FSM 13.2.3](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2 - FSM 13.5](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[IFS Food 7, Part 2, 4.4.1](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 4.4.1](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO/TS 22002-1:2009, 9.2](https://www.iso.org/standard/44001.html)[ISO/TS 22002-4:2013, 4.6.2](https://www.iso.org/standard/60969.html)[ISO/TS 22002-6:2016, 4.6.2](https://www.iso.org/standard/66126.html)[SQF FSC 9, Food Manufacturing, Part B, 2.3.4.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.3.4.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.3.4.1](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.6.4)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 7.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #961, Annex 13, 7.1 and 7.3](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 14.8](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **15.4** The system should provide a means for ordering inventory through a qualified vendor using a vendor master list containing approval status for order validation. |  |
| [21 CFR Part 211.196](https://www.law.cornell.edu/cfr/text/21/211.196)[21 CFR Part 212.90](https://www.law.cornell.edu/cfr/text/21/212.90)[21 CFR Part 225.110](https://www.law.cornell.edu/cfr/text/21/225.110)[21 CFR Part 606.165](https://www.law.cornell.edu/cfr/text/21/606.165)[29 CFR Part 1910.1450 Appendix A (I)](https://www.law.cornell.edu/cfr/text/29/1910.1450)[A2LA C211 4.6](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASTM E1578-18 E-8-5](https://www.astm.org/e1578-18.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.6.2)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Hemp Production Program Laboratory Testing Guidelines, Summary of Practice 1.5](https://www.ams.usda.gov/sites/default/files/media/TestingGuidelinesforHemp.pdf) | **15.5** The system should provide a means for accurately recording the receipt, approval, distribution, and disposal of materials. |  |
| [21 CFR Part 211.82 (b)](https://www.law.cornell.edu/cfr/text/21/211.82)[21 CFR Part 211.84 (a)](https://www.law.cornell.edu/cfr/text/21/211.84)[21 CFR Part 211.89](https://www.law.cornell.edu/cfr/text/21/211.89)[21 CFR Part 211.110 (d)](https://www.law.cornell.edu/cfr/text/21/211.110)[21 CFR Part 211.142 (a)](https://www.law.cornell.edu/cfr/text/21/211.142)[21 CFR Part 212.40 (c)](https://www.law.cornell.edu/cfr/text/21/212.40)[ASTM E1578-18 E-8-6](https://www.astm.org/e1578-18.html)[WHO Technical Report Series, #986, Annex 2, 12.18](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **15.6** The system should provide a means for quarantining specific material types until they can be validated by a quality control test or disposed of. |  |
| [21 CFR Part 211.89](https://www.law.cornell.edu/cfr/text/21/211.89)[21 CFR Part 211.110 (d)](https://www.law.cornell.edu/cfr/text/21/211.110)[42 CFR Part 493.1252 (d)](https://www.law.cornell.edu/cfr/text/42/493.1252)[ASTM E1578-18 E-8-7](https://www.astm.org/e1578-18.html) | **15.7** The system should allow authorized personnel to retire faulty or poor quality materials from use. |  |
| [21 CFR Part 211.89](https://www.law.cornell.edu/cfr/text/21/211.89)[ASTM E1578-18 E-8-8](https://www.astm.org/e1578-18.html) | **15.8** The system shall clearly designate a standard or reagent as being disposed or consumed. |  |

## 16. Investigation and quality management

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 312.62 (b)](https://www.law.cornell.edu/cfr/text/21/312.62)[21 CFR Part 812.140 (a-3)](https://www.law.cornell.edu/cfr/text/21/812.140) | **16.1** The system shall be able to create and accurately maintain complete case histories, allowing them to be electronically signed. |  |
| [21 CFR Part 312.57 (a)](https://www.law.cornell.edu/cfr/text/21/312.57)[21 CFR Part 312.62 (a)](https://www.law.cornell.edu/cfr/text/21/312.62)[21 CFR Part 606.165](https://www.law.cornell.edu/cfr/text/21/606.165)[21 CFR Part 812.140 (a-2) and (b-2)](https://www.law.cornell.edu/cfr/text/21/812.140) | **16.2** The system shall be able to accurately track the reception, use, storage, shipment and disposition of investigational cannabis-related drugs, including details such as, but not limited to, type, quantity, unique identifiers, dates, names, reasoning for return or disposition, shipping demographics, and signatures. |  |
| [21 CFR Part 1.1152 (c)](https://www.law.cornell.edu/cfr/text/21/part-117)[21 CFR Part 58.81 (a)](https://www.law.cornell.edu/cfr/text/21/58.81)[21 CFR Part 211.100](https://www.law.cornell.edu/cfr/text/21/211.100)[21 CFR Part 211.111](https://www.law.cornell.edu/cfr/text/21/211.111)[21 CFR Part 211.192](https://www.law.cornell.edu/cfr/text/21/211.192)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[21 CFR Part 606.171](https://www.law.cornell.edu/cfr/text/21/606.171)[42 CFR Part 493.1253 (b-2)](https://www.law.cornell.edu/cfr/text/42/493.1253)[A2LA C211 5.4](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ABFT Accreditation Manual C-16](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ABFT Accreditation Manual F-2](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ABFT Accreditation Manual J-3](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1578-18 E-9-1](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 5.6.2.3](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 9.3.4](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CLSI QMS22 2.2.2.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 3.3](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.2.4](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 24.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[ISO/IEC 17025:2017 7.2.1.7](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 7.2.2.1](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 7.10.2](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 8.7.1](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OECD GLP Principles 7.3](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.9 and 5.7.2)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 8.2.2](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.3.6](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 16.3](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **16.3** The system shall be able to record instances of identified nonconformance and method deviation, as well as the actions required to restore the process to conformity. In the case of a planned deviation, the system shall require documentation, justification, proof of validation, adjusted reference intervals, and authorization for the deviated process. |  |
| [42 CFR Part 493.1282](https://www.law.cornell.edu/cfr/text/42/493.1282)[ASTM E1578-18 E-9-2](https://www.astm.org/e1578-18.html)[E.U. Commission Reg. No. 2073/2005 Article 9](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02005R2073-20200308) | **16.4** The system should clearly identify samples and tests that are out-of-specification (OOS) and out-of-trend (OOT) as unique incidents. |  |
| [21 CFR Part 606.100 (c)](https://www.law.cornell.edu/cfr/text/21/606.100)[42 CFR Part 493.1282](https://www.law.cornell.edu/cfr/text/42/493.1282)[ASTM E1578-18 E-9-3](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.1.2.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[CLSI QMS22 2.2.2.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA QA/G-5 2.2.10](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[WHO Technical Report Series, #986, Annex 2, 17.12](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #996, Annex 5, 11.12](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **16.5** The system should trigger an alert or notification when an OOS/OOT status is found, indicating a delay in processing and prompting a documented investigation to identify the root cause. |  |
| [10 CFR Part 30.34 (g)](https://www.law.cornell.edu/cfr/text/10/30.34)[21 CFR Part 112.147](https://www.law.cornell.edu/cfr/text/21/part-112)[21 CFR Part 225.58 (d)](https://www.law.cornell.edu/cfr/text/21/225.58)[21 CFR Part 225.158](https://www.law.cornell.edu/cfr/text/21/225.158)[21 CFR Part 606.100 (c)](https://www.law.cornell.edu/cfr/text/21/606.100)[21 CFR Part 820.100](https://www.law.cornell.edu/cfr/text/21/820.100)[42 CFR Part 493.1282](https://www.law.cornell.edu/cfr/text/42/493.1282)[61 FR 38806, 9 CFR Part 417.3](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[A2LA C211 4.9 and 4.11](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASTM E1578-18 E-9-4](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.4.3](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.1.2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 9.3.5](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CLSI QMS22 2.6.4](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[E.U. Commission Directive 2003/94/EC Article 13](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[FDA Hazard Analysis Critical Control Point Principle 5](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 25](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[NYSDOH ELAP Medical Marijuana Microbiology Guidance](https://www.wadsworth.org/sites/default/files/WebDoc/MM%20guidance%20procedure%20for%20Micro%20iDOC-120320.pdf)[NIST 800-53, Rev. 5, IR-5](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[SQF FSC 9, Food Manufacturing, Part B, 2.5.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.5.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.5.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (throughout)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 12.4h](https://www.ams.usda.gov/services/lab-testing/lab-approval)[WADA International Standard for Laboratories (ISL) 5.3.9](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #961, Annex 13, 11.1](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 2.1 (f, j)](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 5.0](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #996, Annex 5, 11.12](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **16.6** The system shall allow for the documentation of and corrective and preventive action towards all types of nonconformance. |  |
| [21 CFR Part 225.58 (d)](https://www.law.cornell.edu/cfr/text/21/225.58)[21 CFR Part 225.158](https://www.law.cornell.edu/cfr/text/21/225.158)[42 CFR Part 493.1282](https://www.law.cornell.edu/cfr/text/42/493.1282)[42 CFR Part 493.1289](https://www.law.cornell.edu/cfr/text/42/493.1289)[61 FR 38806, 9 CFR Part 417.3](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[A2LA C211 4.8 and 4.11](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASTM E1578-18 E-9-5](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.4.3](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 5.6.1.2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 9.3.5](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL), 6th Edition](https://www.cdc.gov/labs/BMBL.html)[CJIS Security Policy 5.3.4](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy Appendix G.7](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[E.U. Commission Directive 2003/94/EC Article 13](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[FDA Hazard Analysis Critical Control Point Principle 5](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, D, I, K - FSM 22](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[NYSDOH ELAP Medical Marijuana Microbiology Guidance](https://www.wadsworth.org/sites/default/files/WebDoc/MM%20guidance%20procedure%20for%20Micro%20iDOC-120320.pdf)[NIST 800-53, Rev. 5, AU-6(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IR-4(1) and IR-5](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, SI-2 and SI-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[SQF FSC 9, Food Manufacturing, Part B, 2.5.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.5.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.5.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[WHO Technical Report Series, #986, Annex 2, 2.1 (f, j)](https://extranet.who.int/pqweb/medicines/who-technical-report-series)[WHO Technical Report Series, #986, Annex 2, 5.0](https://extranet.who.int/pqweb/medicines/who-technical-report-series) | **16.7** The system should track and record incidents and associated corrective actions, allowing authorized personnel to document the effectiveness of the actions, identify insufficient resolutions, and curb repeat occurrences. |  |
| [ASTM E1578-18 E-9-6](https://www.astm.org/e1578-18.html) | **16.8** The system should provide a means for configurable workflows to manage OOS and OOT incidents according to an organization’s standard operating procedures. |  |
| [9 CFR Part 2.35](https://www.law.cornell.edu/cfr/text/9/2.35) | **16.9** The system should provide a means for documenting and maintaining records related to the acquisition, disposition, euthanization, and welfare of animals involved in investigations (research), with the ability to include important metadata such as name and demographics of the acquirer, their USDA license or registration number, the USDA tag/tattoo number of the animal, the animal's description, etc. |  |

## Technology and Performance Improvements

## 17. Instrument data systems functions

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 E-12-1](https://www.astm.org/e1578-18.html)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[CLSI AUTO15 2.0](https://clsi.org/standards/products/quality-management-systems/documents/qms22/) | **17.1** The system should be able to use an application programming interface or web services to communicate with the instrument data systems common to cannabis testing, including chromatography, spectroscopy, spectrometry, and polymerase chain reaction systems. |  |
| [ASTM E1578-18 E-12-2](https://www.astm.org/e1578-18.html)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[CLSI AUTO15 2.0](https://clsi.org/standards/products/quality-management-systems/documents/qms22/) | **17.2** The system should be capable of sending samples and test orders to the instrument data systems common to cannabis testing. |  |
| [ASTM E1578-18 E-12-3](https://www.astm.org/e1578-18.html)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[CLSI AUTO15 2.0](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[CLSI QMS22 2.2.2.5](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 4.9.16](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[WHO Technical Report Series, #996, Annex 5, 4.12](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **17.3** The system should be capable of receiving test results from the instrument data systems common to cannabis testing and verifying those results for completeness and readability. |  |
| [ASTM E1578-18 E-12-4](https://www.astm.org/e1578-18.html)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[CLSI AUTO15 2.0](https://clsi.org/standards/products/quality-management-systems/documents/qms22/) | **17.4** The system should be capable of generically parsing instrument data from the instrument data systems common to cannabis testing, in order to extract important sample details and results. |  |

## 18. Systems integration

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 211.105 (a)](https://www.law.cornell.edu/cfr/text/21/211.105)[ASTM E1578-18 E-13-1](https://www.astm.org/Standards/E1578.htm) | **18.1** The system should be capable of communicating any status changes for samples, lots, instruments, and other dynamic entities to and from external systems, including point-of-sale systems, cultivation management systems, seed-to-sale systems, and any other state- and locally mandated industry reporting systems. |  |
| [ASTM E1578-18 E-13-2](https://www.astm.org/Standards/E1578.htm) | **18.2** The system should accurately communicate overall system status changes to external systems. |  |
| [21 CFR Part 11.10 (c)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 58.190](https://www.law.cornell.edu/cfr/text/21/58.190)[ABFT Accreditation Manual C-15](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1578-18 E-13-3](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.9.5 and 4.9.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[ISO/IEC 17025:2017 8.4.2](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OECD GLP Principles 3.4](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[OECD GLP Principles 10](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[USDA Administrative Procedures for the PDP 5.5](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #996, Annex 5, 11.16 and Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **18.3** The system shall provide a means to choose—based on date and type of data—electronic data and metadata to archive. |  |
| [21 CFR Part 11.10 (c)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 58.51](https://www.law.cornell.edu/cfr/text/21/58.51)[21 CFR Part 58.190](https://www.law.cornell.edu/cfr/text/21/58.190)[ABFT Accreditation Manual C-15](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1578-18 E-13-4](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[EPA ERLN Laboratory Requirements 4.9.5](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[E.U. Annex 11-17](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[ISO/IEC 17025:2017 8.4.2](https://www.iso.org/standard/66912.html)[OECD GLP Principles 3.4](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[OECD GLP Principles 10](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[USDA Administrative Procedures for the PDP 5.2.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Administrative Procedures for the PDP 5.5](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #996, Annex 5, 11.16 and Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **18.4** The system shall provide a guaranteed means to retrieve and restore archived data and metadata that is readable and accurate. |  |
| [ASTM E1578-18 E-13-5](https://www.astm.org/Standards/E1578.htm) | **18.5** The system should feature a reliable, effective, and supported data storage system. |  |
| [21 CFR Part 1.1110](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 1.1152 (a–b)](https://www.law.cornell.edu/cfr/text/21/part-1)[ASTM E1578-18 C-6-6](https://www.astm.org/e1578-18.html)[ASTM E1578-18 E-13-6](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.2.3.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[WADA International Standard for Laboratories (ISL) 5.2.3.5](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl) | **18.6** The system should be able to interface directly with a third-party reporting tool, including seed-to-sale and other state- and locally mandated reporting tools. |  |
| [ASTM E1578-18 E-13-7](https://www.astm.org/Standards/E1578.htm) | **18.7** The system should be capable of being configured to and conform to the laboratory's existing data storage platforms and standards. |  |
| [ASTM E1578-18 E-13-8](https://www.astm.org/Standards/E1578.htm) | **18.8** The system should provide the ability to modify the data structures of the data storage mechanism as needed. |  |
| [ASTM E1578-18 E-13-9](https://www.astm.org/Standards/E1578.htm) | **18.9** The system should allow for both development and production environments for its data storage tools and allow the movement of records from one environment to another. |  |
| [ASTM E1578-18 E-13-10](https://www.astm.org/Standards/E1578.htm) | **18.10** The system shall provide data storage tools capable of fine-tuning the performance and security of data. |  |
| [21 CFR Part 11.10 (c)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 211.68 (b)](https://www.law.cornell.edu/cfr/text/21/211.68)[21 CFR Part 820.180](https://www.law.cornell.edu/cfr/text/21/820.180)[45 CFR Part 164.308](https://www.law.cornell.edu/cfr/text/45/164.308)[A2LA C211 4.13.1.4](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[AAVLD Requirements for an AVMDL Sec. 4.10.1.4](https://www.aavld.org/accreditation-requirements-page)[ACMG Technical Standards for Clinical Genetics Laboratories C5.7](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1578-18 E-13-11](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.2.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 3.3.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.4.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[CLSI QMS22 2.8.5](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[EPA 815-R-05-004 Chap. IV, Sec. 8](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 7.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.9.5 and 4.9.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.1.9](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[E.U. Annex 11-7.2](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Commission Directive 2003/94/EC Article 9.2](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 8.4.2](https://www.iso.org/standard/66912.html)[NIST 800-53, Rev. 5, CP-9 and CP-10](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.13.1.4)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[WADA International Standard for Laboratories (ISL) 5.2.3.5](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 15.9](https://www.who.int/medicines/areas/quality_safety/quality_assurance/expert_committee/trs_986/en/)[WHO Technical Report Series, #996, Annex 5, Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **18.11** The system’s data storage tools shall provide data backup and retrieval functions that meet or exceed industry best practices, including producing exact and complete backups that are secure from manipulation and loss. |  |
| [ASTM E1578-18 E-13-12](https://www.astm.org/Standards/E1578.htm) | **18.12** The architecture of the system should be organized such that modules are clearly and logically separated, with standard interfaces provided between the modules. |  |
| [ASTM E1578-18 E-13-13](https://www.astm.org/Standards/E1578.htm) | **18.13** The system should be able to optimally use system and hardware resources to allow for concurrent usage and high-peak usage. |  |
| [ASTM E1578-18 E-13-14](https://www.astm.org/Standards/E1578.htm) | **18.14** The system should come with a well-documented application programming interface in order to facilitate granular interfaces with the system's underlying modular functionality. |  |
| [ASTM E1578-18 E-13-15](https://www.astm.org/e1578-18.html)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[E.U. Annex 11-5](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html) | **18.15** The system shall provide a means to integrate and exchange data electronically based on relevant methods, and in such a way so as to ensure accurate and secure data transfer and processing among instruments and third-party systems like state- and locally mandated seed-to-sale systems. |  |
| [ASTM E1578-18 E-13-16](https://www.astm.org/Standards/E1578.htm) | **18.16** The system shall be able to accurately replicate its data storage tools to ensure a recoverable system in the event of hardware failure. |  |
| [ASTM E1578-18 E-13-17](https://www.astm.org/Standards/E1578.htm) | **18.17** The system should be able to interface with an external enterprise resource planning system. |  |
| [ASTM E1578-18 E-13-18](https://www.astm.org/Standards/E1578.htm) | **18.18** The system should be capable of interfacing with enterprise middleware. |  |

## 19. Laboratory scheduling and capacity planning

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 211.25 (c)](https://www.law.cornell.edu/cfr/text/21/211.25)[ACMG Technical Standards for Clinical Genetics Laboratories B2](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASTM E1578-18 E-14-1](https://www.astm.org/e1578-18.html) | **19.1** The system should be able to accurately gauge and report test-based work capacity or throughput. |  |
| [ASTM E1578-18 E-14-2](https://www.astm.org/e1578-18.html) | **19.2** The system should provide scheduling tools for allocating personnel and instruments to laboratory tasks. |  |
| [ASTM E1578-18 E-14-3](https://www.astm.org/e1578-18.html) | **19.3** The system should provide a means for tasks to be scheduled and allocated against available resources. |  |
| [42 CFR Part 493.1274 (d)](https://www.law.cornell.edu/cfr/text/42/493.1274) | **19.4** The system should be able to track and limit the quantity of samples or hours worked on a type of sample by personnel, e.g., number of mycotoxin analyses or hours worked on them. |  |

## 20. Lean laboratory and continuous improvement

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 E-15-1](https://www.astm.org/Standards/E1578.htm) | **20.1** The system should support a workload leveling strategy that automatically releases laboratory tasks to personnel. |  |
| [ASTM E1578-18 E-15-2](https://www.astm.org/Standards/E1578.htm)[FDA Hazard Analysis Critical Control Point Principle 1](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines) | **20.2** The system should provide a means to quickly visualize and assess workflow processes at strategic points. |  |
| [21 CFR Part 211.42 (b)](https://www.law.cornell.edu/cfr/text/21/211.42)[ASTM E1578-18 E-15-3](https://www.astm.org/Standards/E1578.htm)[FDA Hazard Analysis Critical Control Point Principle 1](https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines) | **20.3** The system should provide a means for mapping everyday workflow while identifying potential failure points. |  |

## 21. Artificial intelligence and smart systems

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 E-16-1](https://www.astm.org/e1578-18.html) | **21.1** The system should provide a means for integrating artificial intelligence (AI) into laboratory workflow as a smart agent or assistant. |  |
| [ASTM E1578-18 E-16-2](https://www.astm.org/e1578-18.html) | **21.2** The system should support ontology-based machine learning for assisting with the analysis of laboratory informatics datasets. |  |
| [ASTM E1578-18 E-16-3](https://www.astm.org/e1578-18.html) | **21.3** The system should support voice data capture and retrieval as smart laboratory assistance functions. |  |
| [ASTM E1578-18 E-16-4](https://www.astm.org/e1578-18.html) | **21.4** The system should be able to reschedule samples, change test assignments, and perform other laboratory activities based on voice command input. |  |
| [ASTM E1578-18 E-16-5](https://www.astm.org/e1578-18.html)[NIST 800-53, Rev. 5, MA-6(2)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **21.5** The system should support predictive maintenance routines for laboratory instruments and equipment. |  |
| [ASTM E1578-18 E-16-6](https://www.astm.org/e1578-18.html) | **21.6** The system should judiciously allow various system parameters to be optimized and ideal models set within the system by AI. |  |
| [ASTM E1578-18 E-16-7](https://www.astm.org/e1578-18.html) | **21.7** The system should allow AI to algorithmically infer from past learning how to customize without explicit instruction system parameters such as aggregation, transformation, and reporting of data. |  |
| [ASTM E1578-18 E-16-8](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.1.2.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[NIST 800-53, Rev. 5, SI-4(5) and SI-4(7)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **21.8** The system should monitor laboratory operation parameters (such as capacity utilization and data integrity risks) and send notifications when necessary with recommendations for immediate and corrective action. The system should also maintain a log of all such monitored operational parameters and their status changes. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[7 CFR Part 331.17](https://www.law.cornell.edu/cfr/text/7/331.17)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[9 CFR Part 121.17](https://www.law.cornell.edu/cfr/text/9/121.17)[21 CFR Part 211.28](https://www.law.cornell.edu/cfr/text/21/211.28)[21 CFR Part 211.46](https://www.law.cornell.edu/cfr/text/21/211.46)[21 CFR Part 312.58 (b)](https://www.law.cornell.edu/cfr/text/21/312.58)[21 CFR Part 312.69](https://www.law.cornell.edu/cfr/text/21/312.69)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[42 CFR Part 73.17](https://www.law.cornell.edu/cfr/text/42/73.17)[45 CFR Part 164.310](https://www.law.cornell.edu/cfr/text/45/164.310)[A2LA C211 5.3.4](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C211 5.4.7.2](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 5.3](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAVLD Requirements for an AVMDL Sec. 5.3.1–2](https://www.aavld.org/accreditation-requirements-page)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.3.4.1](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1492-11 4.1.8](https://www.astm.org/e1492-11r17.html)[ASTM E1492-11 4.4.2](https://www.astm.org/e1492-11r17.html)[ASTM E1578-18 E-16-9](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.9.1.6](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.4.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 4.1.13](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.9.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 6.3.3](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.3.4](https://www.iso.org/standard/66912.html)[ISO/TS 22002-1:2009, 18.2](https://www.iso.org/standard/44001.html)[ISO/TS 22002-4:2013, 4.15](https://www.iso.org/standard/60969.html)[NIST 800-53, Rev. 5, MP-2](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, PE-6(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[USDA Administrative Procedures for the PDP 5.2.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Sample Processing and Analysis Procedures for PDP 5.2](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #986, Annex 2, 9.5](https://www.who.int/medicines/areas/quality_safety/quality_assurance/expert_committee/trs_986/en/)[WHO Technical Report Series, #986, Annex 2, 12.8 and 12.18](https://www.who.int/medicines/areas/quality_safety/quality_assurance/expert_committee/trs_986/en/) | **21.9** The system should allow for other types of facility monitoring (such as alarm, light, lock, and door statuses) and send notifications when necessary with recommendations for immediate and corrective action. The system should also maintain a log of all such monitored systems and their status changes. |  |
| [42 CFR Part 493.1252](https://www.law.cornell.edu/cfr/text/42/493.1252)[ASTM E1578-18 E-16-10](https://www.astm.org/e1578-18.html)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html) | **21.10** The system should monitor instrument health (such as critical parameters and maintenance timing) and send notifications when necessary with recommendations for immediate and corrective action. The system should also maintain a log of all such monitored instrument activities and status changes. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[7 CFR Part 331.17](https://www.law.cornell.edu/cfr/text/7/331.17)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[9 CFR Part 121.17](https://www.law.cornell.edu/cfr/text/9/121.17)[21 CFR Part 820.70 (c)](https://www.law.cornell.edu/cfr/text/21/820.70)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[42 CFR Part 73.17](https://www.law.cornell.edu/cfr/text/42/73.17)[42 CFR Part 493.1252](https://www.law.cornell.edu/cfr/text/42/493.1252)[42 CFR Part 493.1278](https://www.law.cornell.edu/cfr/text/42/493.1278)[A2LA C211 5.3](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C223 5.3](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[ACMG Technical Standards for Clinical Genetics Laboratories C1.2](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[AAVLD Requirements for an AVMDL Sec. 5.3.1–2](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. E-22](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASTM E1578-18 E-16-11](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.2.3.5](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[ISO 15189:2012 5.2.6](https://www.iso.org/standard/56115.html)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 6.3.3](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 6.3.4](https://www.iso.org/standard/66912.html)[ISO/IEC 17025:2017 7.4.4](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OECD GLP Principles 10](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[SQF FSC 9, Food Manufacturing, Part B, 2.4.4.5](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.4.4.5](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.8.4)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Sample Processing and Analysis Procedures for PDP 5.2](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.3.4 and 5.3.11](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 12.8 and 12.16](https://www.who.int/medicines/areas/quality_safety/quality_assurance/expert_committee/trs_986/en/) | **21.11** The system should allow for environmental control and monitoring of equipment (such as incubators and freezers) and send notifications when necessary with recommendations for immediate and corrective action. The system should also maintain a log of all such monitored equipment and their associated status changes. |  |

**Security and Integrity of Systems and Operations**

## 22. Data integrity

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 E-17-1](https://www.astm.org/e1578-18.html)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[WHO Technical Report Series, #996, Annex 5, 9.1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **22.1** System functionality should support ALCOA principles. |  |
| [61 FR 38806, 9 CFR Part 417.5](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[ASTM E1578-18 E-17-2](https://www.astm.org/e1578-18.html)[EPA 815-R-05-004 Chap. IV, Sec. 8](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[A2LA C211 4.13.2.3](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[EPA ERLN Laboratory Requirements 4.8.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.9.1 and 4.9.7](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[NIST 800-53, Rev. 5, SI-12](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **22.2** The system shall protect entered data so as to prevent it from being obscured by new data, keeping both the old and current data available for review. |  |
| [21 CFR Part 1.1152 (d)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 58.190](https://www.law.cornell.edu/cfr/text/21/58.190)[42 CFR Part 93.305](https://www.law.cornell.edu/cfr/text/42/93.305)[42 CFR Part 93.310](https://www.law.cornell.edu/cfr/text/42/93.310)[ASTM E1578-18 E-17-3](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.2.2.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[EPA 815-R-05-004 Chap. IV, Sec. 8](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.3.4.1](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.8.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.8.9](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.9.9](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[NIST 800-53, Rev. 5, SI-12](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[OECD GLP Principles 10](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.13.3)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 5.2.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Data and Instrumentation for PDP 8.1.3](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #996, Annex 5, 4.12 and Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **22.3** The system shall securely maintain a true, readable copy of an instrument's original (raw) data for on-demand review. |  |
| [7 CFR Part 91.30](https://www.law.cornell.edu/cfr/text/7/91.30)[7 CFR Part 331.17 (c)](https://www.law.cornell.edu/cfr/text/7/331.17)[9 CFR Part 2.35](https://www.law.cornell.edu/cfr/text/9/2.35)[9 CFR Part 121.17 (c)](https://www.law.cornell.edu/cfr/text/9/121.17)[10 CFR Part 20.2103–10](https://www.law.cornell.edu/cfr/text/10/20.2103)[10 CFR Part 30.34 (g)](https://www.law.cornell.edu/cfr/text/10/30.34)[10 CFR Part 30.51–2](https://www.law.cornell.edu/cfr/text/10/30.51)[21 CFR Part 1.1154 (a)](https://www.law.cornell.edu/cfr/text/21/part-1)[21 CFR Part 11.10 (c)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 58.195](https://www.law.cornell.edu/cfr/text/21/58.195)[21 CFR Part 106.100 (n)](https://www.law.cornell.edu/cfr/text/21/part-106)[21 CFR Part 112.164](https://www.law.cornell.edu/cfr/text/21/part-112)[21 CFR Part 114.100 (e)](https://www.law.cornell.edu/cfr/text/21/part-114)[21 CFR Part 117.315](https://www.law.cornell.edu/cfr/text/21/part-117)[21 CFR Part 120.12](https://www.law.cornell.edu/cfr/text/21/part-120)[21 CFR Part 123.9](https://www.law.cornell.edu/cfr/text/21/part-123)[21 CFR Part 129.80 (h)](https://www.law.cornell.edu/cfr/text/21/part-129)[21 CFR Part 211.180](https://www.law.cornell.edu/cfr/text/21/211.180)[21 CFR Part 212.110 (c)](https://www.law.cornell.edu/cfr/text/21/211.110)[21 CFR Part 225.42 (b-8)](https://www.law.cornell.edu/cfr/text/21/225.42)[21 CFR Part 225.58 (c–d)](https://www.law.cornell.edu/cfr/text/21/225.58)[21 CFR Part 225.102](https://www.law.cornell.edu/cfr/text/21/225.102)[21 CFR Part 225.110](https://www.law.cornell.edu/cfr/text/21/225.110)[21 CFR Part 225.158](https://www.law.cornell.edu/cfr/text/21/225.158)[21 CFR Part 225.202](https://www.law.cornell.edu/cfr/text/21/225.202)[21 CFR Part 226.42 (a)](https://www.law.cornell.edu/cfr/text/21/226.42)[21 CFR Part 226.58 (f)](https://www.law.cornell.edu/cfr/text/21/226.58)[21 CFR Part 226.102](https://www.law.cornell.edu/cfr/text/21/226.102)[21 CFR Part 226.115](https://www.law.cornell.edu/cfr/text/21/226.115)[21 CFR Part 312.57](https://www.law.cornell.edu/cfr/text/21/312.57)[21 CFR Part 312.62](https://www.law.cornell.edu/cfr/text/21/312.62)[21 CFR Part 507.208](https://www.law.cornell.edu/cfr/text/21/part-507)[21 CFR Part 606.160 (d)](https://www.law.cornell.edu/cfr/text/21/606.160)[21 CFR Part 812.140 (d)](https://www.law.cornell.edu/cfr/text/21/812.140)[21 CFR Part 820.180 (b)](https://www.law.cornell.edu/cfr/text/21/820.180)[29 CFR Part 1910.120 (f)(8)](https://www.law.cornell.edu/cfr/text/29/1910.120)[29 CFR Part 1910.1030 (h-2)](https://www.law.cornell.edu/cfr/text/29/1910.1030)[40 CFR Part 141.33](https://www.law.cornell.edu/cfr/text/40/141.33)[40 CFR Part 141.722](https://www.law.cornell.edu/cfr/text/40/141.722)[40 CFR Part 262.11 (f)](https://www.law.cornell.edu/cfr/text/40/262.11)[40 CFR Part 262.40](https://www.law.cornell.edu/cfr/text/40/262.40)[40 CFR Part 262.213](https://www.law.cornell.edu/cfr/text/40/262.213)[40 CFR Part 704 Subpart A](https://www.law.cornell.edu/cfr/text/40/part-704/subpart-A)[40 CFR Part 717.15 (d)](https://www.law.cornell.edu/cfr/text/40/717.15)[42 CFR Part 73.17 (c)](https://www.law.cornell.edu/cfr/text/42/73.17)[42 CFR Part 93.313 (h)](https://www.law.cornell.edu/cfr/text/42/93.313)[42 CFR Part 93.317](https://www.law.cornell.edu/cfr/text/42/93.317)[42 CFR Part 493.1105](https://www.law.cornell.edu/cfr/text/42/493.1105)[42 CFR Part 493.1283](https://www.law.cornell.edu/cfr/text/42/493.1283)[45 CFR Part 164.105](https://www.law.cornell.edu/cfr/text/45/164.105)[45 CFR Part 164.316](https://www.law.cornell.edu/cfr/text/45/164.316)[45 CFR Part 164.530](https://www.law.cornell.edu/cfr/text/45/164.530)[61 FR 38806, 9 CFR Part 310.25](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[61 FR 38806, 9 CFR Part 381.94](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[61 FR 38806, 9 CFR Part 417.5](https://www.govinfo.gov/app/details/FR-1996-07-25/96-17837/summary)[A2LA C223 5.4](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[A2LA C223 5.9](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.359.5506&rep=rep1&type=pdf)[AAFCO QA/QC Guidelines for Feed Laboratories Sec. 2.4.4 or 3.1](https://www.aafco.org/Publications/QA-QC-Guidelines-for-Feed-Laboratories)[AAVLD Requirements for an AVMDL Sec. 4.10.1.2](https://www.aavld.org/accreditation-requirements-page)[AAVLD Requirements for an AVMDL Sec. 4.10.2.1](https://www.aavld.org/accreditation-requirements-page)[AAVLD Requirements for an AVMDL Sec. 5.4.3.2](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. E-33](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ACMG Technical Standards for Clinical Genetics Laboratories C1.5](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ACMG Technical Standards for Clinical Genetics Laboratories C5.6](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ACMG Technical Standards for Clinical Genetics Laboratories E2.1](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[AIHA-LAP Policies 2022 2A.7.5.1](https://www.aihaaccreditedlabs.org/policies)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 4.14.1.2 and 4.15.1.2](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.9.3.6 and 5.9.7](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 E-17-4](https://www.astm.org/e1578-18.html)[BRC GSFS, Issue 8, 3.3.2](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL), 6th Edition](https://www.cdc.gov/labs/BMBL.html)[CJIS Security Policy 5.3.4](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy 5.4.6–7](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy 5.5.2.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.8.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[Codex Alimentarius CXC 1-1969, Ch.1, 7.4](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXC%2B1-1969%252FCXC_001e.pdf) [EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[E.U. Annex 11-7.1](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Commission Directive 2003/94/EC Article 9.1](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[E.U. Commission Directive 2003/94/EC Article 11.4](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[E.U. Commission Reg. No. 852/2004 Annex I, Section III.8.d](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02004R0852-20210324)[E.U. Commission Reg. No. 852/2004 Annex I, Section III.9.c](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02004R0852-20210324)[EPA 815-R-05-004 Chap. III, Sec. 15](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. IV, Sec. 8](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.9.18](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.11.17](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA QA/G-5 2.1.9](https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5)[GFSI Benchmarking Rqmts., v2020.1, Part 3, A1, A2, B1, B2, B3, C0, C1, C2, C3, C4, I - FSM 9.2.1](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, D - FSM 9.2.2](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[GFSI Benchmarking Rqmts., v2020.1, Part 3, K - FSM 9.2.3](https://mygfsi.com/news-and-resources/?_keyword=GFSI%20Benchmarking%20Requirements&_type=publications)[ICH GCP 4.9.5](https://ichgcp.net/)[IFS Food 7, Part 2, 2.1.2.2](https://www.ifs-certification.com/images/standards/ifs_food7/documents/standards/IFS_Food7_en.pdf)[IFS PACsecure 2, Part 2, 2.1.2.2](https://www.ifs-certification.com/images/standards/ifs_pacsecure2/documents/standards/IFS_pacsecure2_en.pdf)[ISO 15189:2012 4.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 8.4.2](https://www.iso.org/standard/66912.html)[NIST 800-53, Rev. 5, AT-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, AU-11 and AU-11(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, SI-12](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OECD GLP Principles 10](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[OSHA 1910.1020(d)(1)(i–ii)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1020)[OSHA 1910.1450(j)(2)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1450)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[Safe Food for Canadians Regulations SOR/2018-108 Division 3, 48 (4)](https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-108/index.html)[Safe Food for Canadians Regulations SOR/2018-108 Part 5, 90](https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-108/index.html)[SQF FSC 9, Food Manufacturing, Part B, 2.2.3.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodManufacturing_v3-2-FINAL-w-links.pdf)[SQF FSC 9, Pet Food Manufacturing, Part B, 2.2.3.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_PetFood_v3-2-Final-w-Links.pdf)[SQF FSC 9, Manufacture of Food Packaging, Part B, 2.2.3.3](https://www.sqfi.com/wp-content/uploads/2020/11/20227FMIN_FoodPackaging_v3-2-Final-w-Links.pdf)[TNI EL-V1-2016-Rev.2.1 (throughout)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 5.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Hemp Production Program Laboratory Testing Guidelines, Information Sharing 2](https://www.ams.usda.gov/sites/default/files/media/TestingGuidelinesforHemp.pdf)[USDA LAS Laboratory Approval Program (LAP) Policies and Procedures 10c](https://www.ams.usda.gov/services/lab-testing/lab-approval)[USDA Sampling Procedures for PDP 6.5](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.2.3.5 and 5.4.4](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WADA International Standard for the Protection of Privacy and Personal Information (ISPPPI) 10.0](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-protection-privacy-and-personal)[WHO Technical Report Series, #986, Annex 2, 15.8–9](https://www.who.int/medicines/areas/quality_safety/quality_assurance/expert_committee/trs_986/en/)[WHO Technical Report Series, #996, Annex 5, 11.15 and Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **22.4** The system shall have a mechanism to securely retain data in the system for a specific time period and enable protections that ensure the accurate and ready retrieval of that data throughout the records retention period. |  |
| [ASTM E1578-18 E-17-6](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.4.4](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, AU-8](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[WHO Technical Report Series, #996, Annex 5, 4.12 and Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **22.5** The system shall accurately reflect the system date and time in its use of electronic record time stamps. |  |
| [APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1578-18 E-17-7](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.6.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center) | **22.6** The system shall require each and every user to be assigned a unique user ID. |  |
| [ASTM E1578-18 E-17-8](https://www.astm.org/e1578-18.html)[21 CFR Part 11.10 (e)](https://www.law.cornell.edu/cfr/text/21/11.10)[CJIS Security Policy 5.4.5](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[E.U. Annex 11-9](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[NIST 800-53, Rev. 5, AU-9](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **22.7** The system shall prevent the modification, deletion, or disabling of its audit trail, as well as record such attempts. |  |
| [CJIS Security Policy 5.4.2](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, AU-5](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, SI-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **22.8** The system shall be capable of identifying instances of audit processing failure (e.g., write errors, general failure of the audit tool, etc.), sending alerts or notifications to appropriate personnel in such cases. |  |

## 23. Configuration management

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| --- | --- | --- |
| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 S-1-1](https://www.astm.org/e1578-18.html)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf) | **23.1** The system shall provide tools to enter and manage user-configurable lookup or master data. |  |
| [ASTM E1578-18 S-1-2](https://www.astm.org/e1578-18.html) | **23.2** The system shall allow authorized users to configure the specification limits for instrument- and sample-based tests, per laboratory testing protocols and/or state and local regulations, including for specific substrate/matrix types. |  |
| [45 CFR Part 162.1002](https://www.law.cornell.edu/cfr/text/45/162.1002)[USDA Sampling Procedures for PDP 6.3.2](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **23.3** The system shall allow system nomenclature to be configured to use specific data code sets or mandated terminology to support the regulatory requirements of the cannabis testing industry. |  |
| [ASTM E1578-18 S-1-3](https://www.astm.org/e1578-18.html) | **23.4** The system should allow authorized personnel to configure the review and approval of multiple tests at the sample, batch, project, and experiment levels. |  |
| [ASTM E1578-18 S-1-4](https://www.astm.org/e1578-18.html) | **23.5** The system should allow warning and material specification limits to be entered and configured so as to allow their comparison against entered results and determinations for determining whether the results meet those specifications or limits. |  |
| [21 CFR Part 211.100 (b)](https://www.law.cornell.edu/cfr/text/21/211.100)[21 CFR Part 211.160 (a)](https://www.law.cornell.edu/cfr/text/21/211.160) | **23.6** The system should provide a configurable means of allowing the system to automatically save after each entry to help meet ALCOA, CGMP, and other requirements to contemporaneously record data into records. |  |
| [40 CFR Part 3.10](https://www.law.cornell.edu/cfr/text/40/3.10)[40 CFR Part 3.2000](https://www.law.cornell.edu/cfr/text/40/3.2000)[ACMG Technical Standards for Clinical Genetics Laboratories C13.3](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASTM E1578-18 S-1-5](https://www.astm.org/e1578-18.html)[WHO Technical Report Series, #996, Annex 5, Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **23.7** The system should provide a configurable (based on sample, test, or both) means of permitting electronic signatures for both entered results and approved reports. |  |
| [ASTM E1578-18 S-1-6](https://www.astm.org/e1578-18.html) | **23.8** The system should be capable of providing a complete list of all pending tests loaded in the system, the amount of material required for each test, and to which location the associated samples are to be sent for testing. |  |
| [ASTM E1578-18 S-1-7](https://www.astm.org/e1578-18.html) | **23.9** The system shall support configurable cannabis-related laboratory workflows based on appropriate laboratory process and procedure, as well as any regulatory requirements at the federal, state, and local levels. |  |
| [ASTM E1578-18 S-1-8](https://www.astm.org/e1578-18.html) | **23.10** The system shall allow authorized personnel to assign status values for purposes of tracking sample progress or other portions of laboratory workflow. |  |
| [21 CFR Part 211.68](https://www.law.cornell.edu/cfr/text/21/211.68)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1578-18 S-1-9](https://www.astm.org/e1578-18.html) | **23.11** The system should allow authorized personnel to perform revision control of lookup or master data. |  |
| [ASTM E1578-18 S-1-10](https://www.astm.org/e1578-18.html)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf) | **23.12** The system should provide a means for importing lookup or master data. |  |
| [AIHA-LAP Policies 2022 2A.7.8.4](https://www.aihaaccreditedlabs.org/policies)[ASTM E1578-18 S-1-11](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.11.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[USDA Data and Instrumentation for PDP 9.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **23.13** The system shall be able to define the number of significant figures (i.e., set rounding rules) for reported numeric data. |  |
| [ASTM E1578-18 S-1-12](https://www.astm.org/e1578-18.html) | **23.14** The system should allow calculated limits to be created and managed based on test results and relevant metadata. |  |
| [ASTM E1578-18 S-1-13](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 3.2.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.9.11](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf) | **23.15** The system should provide a clear alert or notification upon entry of out-of-specification results. |  |
| [ASTM E1578-18 S-1-14](https://www.astm.org/e1578-18.html) | **23.16** The system shall allow authorized personnel to update static and dynamic data. |  |
| [ASTM E1578-18 S-1-15](https://www.astm.org/e1578-18.html) | **23.17** The system should allow workflow events and status changes to trigger one or more user-defined actions. |  |
| [ASTM E1578-18 S-1-17](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.7.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, AC-6(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, CM-7](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.18** The system should provide an interface for administrative access that permits approved users to configure the system without extra programming or manipulation of data storage systems. |  |
| [ASTM E1578-18 S-1-18](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf) | **23.19** The system should allow administrators to programmatically customize system modules or build calculations within the application, while also accurately documenting those system modifications. |  |
| [ASTM E1578-18 S-1-19](https://www.astm.org/e1578-18.html) | **23.20** The system should provide a multiuser interface that can be configured to local user needs, including display language, character sets, and time zones. |  |
| [21 CFR Part 11.100 (a)](https://www.law.cornell.edu/cfr/text/21/11.100)[ASTM E1578-18 S-1-20](https://www.astm.org/e1578-18.html)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[NIST 800-53, Rev. 5, CM-5(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[WHO Technical Report Series, #996, Annex 5, Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **23.21** The system should support rules governing electronic records and electronic signatures in regulated environments like the cannabis testing industry. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[10 CFR Part 20.2110](https://www.law.cornell.edu/cfr/text/10/20.2110)[10 CFR Part 30.51 (c-1](https://www.law.cornell.edu/cfr/text/10/30.51)[21 CFR Part 11.10 (d)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 211.68](https://www.law.cornell.edu/cfr/text/21/211.68)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[45 CFR Part 164.308](https://www.law.cornell.edu/cfr/text/45/164.308)[A2LA C211 4.13.1.4](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[A2LA C211 5.4.7.2](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[AAVLD Requirements for an AVMDL Sec. 4.10.1.3–4](https://www.aavld.org/accreditation-requirements-page)[AAVLD Requirements for an AVMDL Sec. 5.4.4.1](https://www.aavld.org/accreditation-requirements-page)[ACMG Technical Standards for Clinical Genetics Laboratories C5.3](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.4.7.2.1](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1492-11 4.2.4](https://www.astm.org/e1492-11r17.html)[ASTM E1578-18 S-1-16](https://www.astm.org/e1578-18.html)[ASTM E1578-18 S-1-21](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.5.2](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.4.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[E.U. Annex 11-12](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[EPA 815-R-05-004 Chap. IV, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.1.14–15](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[EPA ERLN Laboratory Requirements 4.9.4 and 4.9.14](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[ICH GCP 2.10](https://ichgcp.net/)[ISO/IEC 17025:2017 7.11.3](https://www.iso.org/standard/66912.html)[NIST 800-53, Rev. 5, CM-5 and CM-5(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[PFP Human and Animal Food Testing Laboratories Best Practices Manual](https://www.pfp-ifss.org/ifss-resources/human-and-animal-food-testing-laboratories-best-practices-manual-december-2018/)[TNI EL-V1-2016-Rev.2.1 (V1,M2 4.13.1.4](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[USDA Administrative Procedures for the PDP 5.2.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WADA International Standard for Laboratories (ISL) 5.2.3.5](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 15.9](https://www.who.int/medicines/areas/quality_safety/quality_assurance/expert_committee/trs_986/en/) | **23.22** The system shall provide a security interface usable across all modules of the system that secures data and operations and prevents unauthorized access to data and functions. |  |
| [BRC GSFS, Issue 8, 3.2.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[BRC GSFS, Issue 8, 3.3.1](https://cdn.scsglobalservices.com/files/program_documents/brc_food_standard_8_0.pdf)[CJIS Security Policy 5.5.2.2–3](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EPA ERLN Laboratory Requirements 4.1.14–15](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[NIST 800-53, Rev. 5, AC-2(11)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.23** The system shall be able to granularly define access control down to the object level, role level, physical location, logical location, network address, and chronometric restriction level for the protection of regulated, patented, confidential, and classified data, methods, or other types of information. |  |
| [ASTM E1578-18 S-1-22](https://www.astm.org/e1578-18.html)[NIST 800-53, Rev. 5, IA-2(10)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.24** The system should support single sign-on such that a user can log in once and access all permitted functions and data. |  |
| [21 CFR Part 11.200 (a)](https://www.law.cornell.edu/cfr/text/21/11.200)[45 CFR Part 164.312](https://www.law.cornell.edu/cfr/text/45/164.312)[45 CFR Part 170.315 (d)](https://www.law.cornell.edu/cfr/text/45/170.315)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.4.7.2.1](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1578-18 E17-5 and S-3-1](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.6.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.4.2.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[EPA 815-R-05-004 Chap. IV, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 7.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.9.4](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[NIST 800-53, Rev. 5, AC-2(7) and AC-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IA-2, IA-5, and IA-8](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, MA-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[WADA International Standard for Laboratories (ISL) 5.2.3.5](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 15.9](https://extranet.who.int/prequal/content/who-technical-report-series)[WHO Technical Report Series, #996, Annex 5, Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **23.25** The system shall provide initial login access using at least two unique identification components, e.g., a user identifier and password, or biometric information linked to and used by the genuine user. |  |
| [21 CFR Part 11.300 (a)](https://www.law.cornell.edu/cfr/text/21/11.300)[ASTM E1578-18 E17-5 and S-3-1](https://www.astm.org/e1578-18.html)[EPA 815-R-05-004 Chap. IV, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[NIST 800-53, Rev. 5, IA-4 and IA-5](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.26** The system shall prevent the same combination of identification components from being used across more than one account. |  |
| [21 CFR Part 11.300 (b)](https://www.law.cornell.edu/cfr/text/21/11.300)[ASTM E1578-18 E17-5 and S-3-1](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.4.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[NIST 800-53, Rev. 5, IA-5 and IA-5(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.27** The system shall allow the administrator to define a time period in days after which a user will be prompted to change their password. |  |
| [CJIS Security Policy 5.6.3.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, AC-2(3)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IA-4 and IA-5(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, PS-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.28** The system shall allow the administrator to define a time period of inactivity for a user identifier, after which it will be disabled and archived. |  |
| [CJIS Security Policy 5.5.2.2](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, AC-10](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.29** The system shall allow the administrator or authorized personnel to configure the allowance or prevention of multiple concurrent active sessions for one unique user. |  |
| [CJIS Security Policy 5.5.4](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, AC-8](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.30** The system shall allow the administrator or authorized personnel to configure approved system use (e.g., "you are accessing a restricted information system," "system use indicates consent to being monitored, recorded, and audited") and other types of notifications to appear before or after a user logs in to the system. These notifications should remain on the screen until acknowledged by the user. |  |
| [21 CFR Part 11.300 (d)](https://www.law.cornell.edu/cfr/text/21/11.300)[21 CFR Part 211.68](https://www.law.cornell.edu/cfr/text/21/211.68)[21 CFR Part 211.100](https://www.law.cornell.edu/cfr/text/21/211.100)[21 CFR Part 211.160 (a)](https://www.law.cornell.edu/cfr/text/21/211.160)[21 CFR Part 211.188](https://www.law.cornell.edu/cfr/text/21/211.188)[21 CFR Part 211.194](https://www.law.cornell.edu/cfr/text/21/211.194)[A2LA C211 4.13.2.1](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASTM E1578-18 E17-5 and S-3-1](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CJIS Security Policy 5.4.1.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.4.4](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[E.U. Commission Directive 2003/94/EC Article 9.2](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[NIST 800-53, Rev. 5, CM-5(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[WADA International Standard for Laboratories (ISL) 5.2.3.5](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WHO Technical Report Series, #986, Annex 2, 15.9](https://www.who.int/medicines/areas/quality_safety/quality_assurance/expert_committee/trs_986/en/) | **23.31** The system shall keep an accurate audit trail of login activities, including failed login attempts, unauthorized logins, and electronic signings. |  |
| [21 CFR Part 11.300 (d)](https://www.law.cornell.edu/cfr/text/21/11.300)[ASTM E1578-18 E17-5 and S-3-1](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.5.3](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[NIST 800-53, Rev. 5, AC-7](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.32** The system shall allow the administrator or authorized personnel to define the number of failed login attempts before the system locks the user out. |  |
| [21 CFR Part 11.200 (a)](https://www.law.cornell.edu/cfr/text/21/11.200)[ASTM E1578-18 S-3-1](https://www.astm.org/e1578-18.html) | **23.33** The system shall require at least one unique identification component for additional electronic signings (beyond initial login) during a single, continuous session. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[21 CFR Part 11.200 (a)](https://www.law.cornell.edu/cfr/text/21/11.200)[21 CFR Part 211.68 (b)](https://www.law.cornell.edu/cfr/text/21/211.68)[21 CFR Part 211.188 (b-11)](https://www.law.cornell.edu/cfr/text/21/211.188)[21 CFR Part 211.194 (a-7 and a-8)](https://www.law.cornell.edu/cfr/text/21/211.194)[21 CFR Part 212.50 (c-10)](https://www.law.cornell.edu/cfr/text/21/212.50)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[ASTM E1578-18 S-3-1](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.6.3.2](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, IA-5](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.34** The vendor shall provide training materials emphasizing the importance of not sharing unique identification components with other individuals and promoting compliance review for ensuring such practices are followed. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[21 CFR Part 11.10 (d)](https://www.law.cornell.edu/cfr/text/21/11.10)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[42 CFR Part 493.1231](https://www.law.cornell.edu/cfr/text/42/493.1231)[45 CFR Part 164.308](https://www.law.cornell.edu/cfr/text/45/164.308)[45 CFR Part 164.514](https://www.law.cornell.edu/cfr/text/45/164.514)[45 CFR Part 170.315 (d)](https://www.law.cornell.edu/cfr/text/45/170.315)[ASTM E1578-18 S-1-25](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.5.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EPA ERLN Laboratory Requirements 4.1.14–15](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[NIST 800-53, Rev. 5, AC-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IA-2, IA-5, and IA-8](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.35** The system shall support the ability to initially assign new individual users to system groups, roles, or both. |  |
| [21 CFR Part 11.100 (a)](https://www.law.cornell.edu/cfr/text/21/11.100)[45 CFR Part 164.312](https://www.law.cornell.edu/cfr/text/45/164.312)[ASTM E1578-18 S-1-24](https://www.astm.org/e1578-18.html)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[WHO Technical Report Series, #996, Annex 5, Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **23.36** The system shall force a user's electronic signature to be unique and traceable to a specific user's account. |  |
| [21 CFR Part 11.100 (a)](https://www.law.cornell.edu/cfr/text/21/11.100)[ASTM E1578-18 S-1-24](https://www.astm.org/e1578-18.html) | **23.37** The system shall prevent the reuse or reassignment of a user's electronic signature. |  |
| [21 CFR Part 11.50](https://www.law.cornell.edu/cfr/text/21/11.50)[E.U. Annex 11-14](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf) | **23.38** When the system generates a complete and accurate copy of an electronically signed record, it shall also display the printed name of the signer, the date and time of signature execution, and any applicable meaning associated with the signature. This shall be applicable for both electronically displayed and printed copies of the electronic record. |  |
| [ASTM E1578-18 S-1-26](https://www.astm.org/e1578-18.html)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[CLSI QMS22 2.8.5.3](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[WHO Technical Report Series, #996, Annex 5, Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **23.39** The system should provide a means to migrate static data into the system. |  |
| [NIST 800-53, Rev. 5, IA-5(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[CLSI QMS22 2.4.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/) | **23.40** The system should provide a means for automatically authenticating if a user's proposed password meets the length, complexity, minimum number of changed characters, and other requirements as configured by the administrator or another authorized system user. |  |
| [NIST 800-53, Rev. 5, IA-6](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **23.41** The system should provide a means for obscuring authentication feedback as it is entered into the system, e.g., displaying asterisks rather than the typed password or displaying actual typed feedback for a distinctly short period of time before obscuring it. |  |

## 24. System validation and commission

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [ASTM E1578-18 S-2-1](https://www.astm.org/e1578-18.html)[CJIS Security Policy Appendix G.8](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, SA-4(3)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **24.1** The vendor should be able to demonstrate the use of software development standards, secure coding practices, formal change control, and software revision control within its development practices. The vendor should also document its staff's skills and certifications. |  |
| [ASTM E1578-18 S-2-2](https://www.astm.org/e1578-18.html)[NIST 800-53, Rev. 5, SA-4(2)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **24.2** The vendor should be willing to provide access to source code through a suitable escrow. |  |
| [ASTM E1578-18 S-2-3](https://www.astm.org/e1578-18.html) | **24.3** The system should be able to document a summary and evaluation of enterprise performance markers and processes. |  |
| [A2LA C211 5.4.7.2](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ASTM E1578-18 S-2-4](https://www.astm.org/e1578-18.html)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 7.11.5](https://www.iso.org/standard/66912.html)[NIST 800-53, Rev. 5, SA-4(1), SA-4(2), and SA-5](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **24.4** The system should be well documented by the vendor in comprehensive training material for all aspects of system use, including administration, operation, and troubleshooting. |  |
| [21 CFR Part 11.10 (a)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 820.70 (i)](https://www.law.cornell.edu/cfr/text/21/820.70)[A2LA C211 5.4.7.2](https://www.uslegalforms.com/form-library/256001-c211-specific-checklist-combined-iso-iec-17025-and-veterinary-laboratory-accreditation)[ACMG Technical Standards for Clinical Genetics Laboratories C5.7](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[CLSI QMS22 2.5](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[E.U. Annex 11-11](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[EPA 815-R-05-004 Chap. IV, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[E.U. Commission Directive 2003/94/EC Article 9.2](https://eur-lex.europa.eu/eli/dir/2003/94/oj)[ISO 15189:2012 5.10.3](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 7.11.2](https://www.iso.org/standard/66912.html)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[OECD GLP Principles 4.1](https://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm)[TNI EL-V1-2016-Rev.2.1 (V1,M2 5.4.7.2)](https://ris.dls.virginia.gov/uploads/1VAC30/dibr/Microsoft%20Word%20-%20STD-ELV1-2016-Rev2.1_LabReqs_ANSIapp.doc-20210426142653.pdf)[WHO Technical Report Series, #996, Annex 5, 10.2](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **25.5** The system shall be validated initially and periodically, with those validation activities being documented, to ensure the accuracy, consistency, and reliability of system performance and its electronic records. |  |
| [ASTM E1578-18 S-2-2](https://www.astm.org/e1578-18.html)[CLSI QMS22 2.5](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[E.U. Annex 11-4](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[WHO Technical Report Series, #996, Annex 5, 10.3–7](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **24.6** The documentation associated with system validation shall discuss all applicable steps of the life cycle, justify applied methods and standards, and include change control records and observed deviations during validation, if applicable. |  |

## 25. System administration

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [21 CFR Part 11.200 (a)](https://www.law.cornell.edu/cfr/text/21/11.200)[45 CFR Part 164.312](https://www.law.cornell.edu/cfr/text/45/164.312)[45 CFR Part 170.315 (d-5)](https://www.law.cornell.edu/cfr/text/45/170.315)[ASTM E1578-18 S-3-1](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.5.5](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.4.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[NIST 800-53, Rev. 5, AC-11 and AC-12](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **25.1** The system shall provide administrators with a configurable period of time to apply to user access or inactivity before again prompting a user for authentication credentials. The system shall also be able to display an explicit message indicating how much time remains before the user session terminates. |  |
| [ASTM E1578-18 S-3-2](https://www.astm.org/e1578-18.html) | **25.2** The system should provide a means for modifying personnel data in a batch. |  |
| [ASTM E1578-18 S-3-3](https://www.astm.org/e1578-18.html) | **25.3** The system should support the storage and export of data in standard and industry-specific data formats, e.g., CSV, especially for regulatory reporting purposes. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[21 CFR Part 11.10 (d)](https://www.law.cornell.edu/cfr/text/21/11.10)[21 CFR Part 211.68 (b)](https://www.law.cornell.edu/cfr/text/21/211.68)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[45 CFR Part 164.308](https://www.law.cornell.edu/cfr/text/45/164.308)[45 CFR Part 164.514](https://www.law.cornell.edu/cfr/text/45/164.514)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1578-18 S-3-7](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.5.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy 5.5.2.4](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy Appendix G.5](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.4.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA 815-R-05-004 Chap. IV, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA 815-R-05-004 Chap. VI, Sec. 8.6](https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30006MXP.PDF)[EPA ERLN Laboratory Requirements 4.1.14–15](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[ISO 15189:2012 5.10.2](https://www.iso.org/standard/56115.html)[NIST 800-53, Rev. 5, AC-2(7) and AC-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IA-2 and IA-8](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, MA-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, PS-4 and PS-5](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[USDA Administrative Procedures for the PDP 5.2.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[USDA Administrative Procedures for the PDP 5.5.1.2](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures)[WHO Technical Report Series, #996, Annex 5, 5.4 and Appendix 1](https://www.gmp-compliance.org/guidelines/gmp-guideline/who-guidance-on-good-data-and-record-management-practices) | **25.4** The system shall support the ability to define, record, and change the level of access for individual users to system groups, roles, machines, processes, and objects based on their responsibilities, including when those responsibilities change. The system should be able to provide a list of individuals assigned to a given system group, role, machine, process, or object. |  |
| [ASTM E1578-18 S-3-8](https://www.astm.org/e1578-18.html) | **25.5** The vendor should provide maintenance agreements and support services for its applications and services. |  |
| [ASTM E1578-18 S-3-9](https://www.astm.org/e1578-18.html)[E.U. Annex 11-3.3](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[NIST 800-53, Rev. 5, SA-16](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[USDA Administrative Procedures for the PDP 5.2.4](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **25.6** The vendor shall provide help desk, training, and installation support, as well as high-quality system documentation. The documentation should be reviewed to ensure that user requirements are fulfilled. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[21 CFR Part 11.10 (c)](https://www.law.cornell.edu/cfr/text/21/11.10)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[45 CFR Part 164.310](https://www.law.cornell.edu/cfr/text/45/164.310)[AAVLD Requirements for an AVMDL Sec. 5.4.4.3](https://www.aavld.org/accreditation-requirements-page)[ABFT Accreditation Manual Sec. D-5–D-8](https://www.abft.org/files/ABFT_LAP_Standards_May_31_2013.pdf)[ASCLD/LAB Supp. Reqs. for the Accreditation of Forensic Science Testing Laboratories 5.4.7.2.1](https://des.wa.gov/sites/default/files/public/documents/About/1063/RFP/Add7_Item4ASCLD.pdf)[ASTM E1492-11 4.2.4](https://www.astm.org/e1492-11r17.html)[CJIS Security Policy 5.5.2](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy 5.8.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[EPA ERLN Laboratory Requirements 4.9.6](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[E.U. Annex 11-7.1](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Annex 11-12](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[ISO 15189:2012 5.10.2](https://www.iso.org/standard/56115.html)[ISO/IEC 17025:2017 7.11.3](https://www.iso.org/standard/66912.html)[NIST 800-53, Rev. 5, MA-5](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, MP-2](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, PE-3, PE-3(1), PE-6, PE-6(1), and PE-6(4)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[USDA Administrative Procedures for the PDP 5.2.1](https://www.ams.usda.gov/datasets/pdp/pdp-standard-operating-procedures) | **25.7** The vendor shall restrict logical access to database storage components to authorized individuals. If providing a hosted service, the vendor should also restrict physical access to database storage components to authorized individuals. (In the case of an on-site solution, the buyer is responsible for limiting physical access to database storage components to meet 21 CFR Part 11, HIPAA, and CJIS guidelines.) |  |
| [CJIS Security Policy 5.5.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center) | **25.8** The system shall be able to tag and document an individual, group, and system account as having been validated for regulatory purposes, and remind the administrator or authorized personnel on a configurable schedule when the account should be validated again. |  |
| [7 CFR Part 331.17](https://www.law.cornell.edu/cfr/text/7/331.17)[9 CFR Part 121.17](https://www.law.cornell.edu/cfr/text/9/121.17)[42 CFR Part 73.17](https://www.law.cornell.edu/cfr/text/42/73.17)[ASTM E1578-18 S-3-10](https://www.astm.org/e1578-18.html) | **25.9** The system should provide a means of integrating with an enterprise personnel security directory, as well as physical security systems. |  |
| [7 CFR Part 331.11](https://www.law.cornell.edu/cfr/text/7/331.11)[9 CFR Part 121.11](https://www.law.cornell.edu/cfr/text/9/121.11)[42 CFR Part 73.11](https://www.law.cornell.edu/cfr/text/42/73.11)[ACMG Technical Standards for Clinical Genetics Laboratories C5.7](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[ASTM E1578-18 S-3-11](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.10.4.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.1.4](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[CLSI QMS22 2.6.1](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EPA ERLN Laboratory Requirements 4.9.13](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[NIST 800-53, Rev. 5, SI-2(5)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards) | **25.10** The vendor should provide timely upgrades and patches, with complete documentation, that have been tested before installation and can be rolled back. |  |
| [ASTM E1578-18 S-3-12](https://www.astm.org/e1578-18.html) | **25.11** The system shall provide a means for migrating data to a new release upon system upgrade. |  |
| [21 CFR Part 1.1154 (b)](https://www.law.cornell.edu/cfr/text/21/part-1)[ASTM E1578-18 S-3-13](https://www.astm.org/e1578-18.html) | **25.12** The system should be expedient with the retrieval of stored items. |  |
| [21 CFR Part 11.10 (b)](https://www.law.cornell.edu/cfr/text/21/11.10)[APHL 2019 LIS Project Management Guidebook](https://www.aphl.org/aboutAPHL/publications/Documents/GH-2019May-LIS-Guidebook-web.pdf)[E.U. Annex 11-5](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf)[E.U. Annex 11-8.1](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-4/annex11_01-2011_en.pdf) | **25.13** The system shall allow the printing of stored electronic records in a complete, accurate, and human-readable format. |  |
| [ASTM E1578-18 S-3-14](https://www.astm.org/e1578-18.html) | **25.14** The system should provide some sort of support for use on mobile technologies, particularly for the purpose of receiving notifications and monitoring processes. |  |
| [ASTM E1578-18 S-3-15](https://www.astm.org/e1578-18.html)[EPA ERLN Laboratory Requirements 4.9.13](https://www.epa.gov/sites/production/files/documents/erln_lab_requirements.pdf)[NIST 800-53, Rev. 5, CM-3(2)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, SI-2](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **25.15** The system shall be able to install an upgrade into a test environment for testing purposes before upgrading the actual production environment. |  |

## 26. Cybersecurity

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [42 CFR Part 493.1231](https://www.law.cornell.edu/cfr/text/42/493.1231)[45 CFR Part 164.312](https://www.law.cornell.edu/cfr/text/45/164.312)[45 CFR Part 170.315 (d-9)](https://www.law.cornell.edu/cfr/text/45/170.315)[ASTM E1578-18 S-4-1](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.6.4](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy 5.8.2.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy 5.10.1.2](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy Appendix G.6](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.2.3.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[EMA Guidance on Good Manufacturing Practice and Good Distribution Practice](https://www.ema.europa.eu/en/human-regulatory/research-development/compliance/good-manufacturing-practice/guidance-good-manufacturing-practice-good-distribution-practice-questions-answers)[NIST 800-53, Rev. 5, AC-17(2)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **26.1** The system should use secure communication protocols like SSL/TLS over Secure Hypertext Transfer Protocol with 256 bit encryption. |  |
| [42 CFR Part 493.1231](https://www.law.cornell.edu/cfr/text/42/493.1231)[45 CFR Part 164.312](https://www.law.cornell.edu/cfr/text/45/164.312)[45 CFR Part 170.315 (d)](https://www.law.cornell.edu/cfr/text/45/170.315)[ACMG Technical Standards for Clinical Genetics Laboratories C1.6](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASTM E1578-18 S-4-2](https://www.astm.org/e1578-18.html)[CJIS Security Policy 5.5.2.4](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy 5.10.1.2](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CJIS Security Policy Appendix G.6](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[NIST 800-53, Rev. 5, SC-13 and SC-28(1)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **26.2** The system should support database encryption and be capable of recording the encryption status of the data contained within. |  |
| [42 CFR Part 493.1231](https://www.law.cornell.edu/cfr/text/42/493.1231)[CJIS Security Policy 5.6.2.2.1](https://www.fbi.gov/services/cjis/cjis-security-policy-resource-center)[CLSI QMS22 2.4.2.2](https://clsi.org/standards/products/quality-management-systems/documents/qms22/)[NIST 800-53, Rev. 5, AC-3](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, IA-2, IA-2(1–4), and IA-8](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final)[NIST 800-53, Rev. 5, MA-4](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **26.3** The system should be able to support multifactor authentication. |  |
| [45 CFR Part 170.202](https://www.law.cornell.edu/cfr/text/45/170.202)[45 CFR Part 170.315 (h)](https://www.law.cornell.edu/cfr/text/45/170.315) | **26.4** The system should support Office of the National Coordinator for Health Information Technology (ONC) transport standards and protocols for the reception and distribution of personal health information (e.g., medical marijuana user data). |  |
| [NIST 800-53, Rev. 5, IA-7](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **26.5** The system should provide a means for authenticating an individual seeking to access any embedded cryptographic module within the system, as well as the individual's role in performing services within the module. |  |
| [NIST 800-53, Rev. 5, SC-15](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **26.6** The system should prevent connected collaborative computing devices (e.g., cameras, microphones, interactive whiteboards) from being activated without explicit permission from the end user, and it should provide a clear indication of any activation to the end user. |  |

## 27. Information privacy

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| **Regulation, Specification, or Guidance** | **Requirement** | **Response** |
| [45 CFR Part 164 Subpart E](https://www.law.cornell.edu/cfr/text/45/part-164/subpart-E)[ACMG Technical Standards for Clinical Genetics Laboratories G17.2](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[ASTM E1578-18 S-5-1](https://www.astm.org/e1578-18.html)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf) | **27.1** The system shall comply with privacy protection compliance like that found in HIPAA provisions (e.g., when handling medical marijuana user data). |  |
| [10 CFR Part 20.2106 (d)](https://www.law.cornell.edu/cfr/text/10/20.2106)[45 CFR Part 164.105](https://www.law.cornell.edu/cfr/text/45/164.105)[45 CFR Part 164 Subpart C](https://www.law.cornell.edu/cfr/text/45/part-164/subpart-C)[45 CFR Part 170.315 (d)](https://www.law.cornell.edu/cfr/text/45/170.315)[ASTM E1578-18 S-5-2](https://www.astm.org/e1578-18.html)[ICH GCP 2.11](https://ichgcp.net/)[NYSDOH CLEP Clinical Laboratory Standards of Practice, General Systems Standards](https://www.wadsworth.org/regulatory/clep/clinical-labs/laboratory-standards)[WADA International Standard for Laboratories (ISL) 5.3.8.3](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-laboratories-isl)[WADA International Standard for the Protection of Privacy and Personal Information (ISPPPI) (throughout)](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-protection-privacy-and-personal) | **27.2** The system should be provisioned with enough security to prevent personally identifiable information in the system from being compromised. |  |
| [45 CFR Part 164.514](https://www.law.cornell.edu/cfr/text/45/164.514)[ACMG Technical Standards for Clinical Genetics Laboratories C5.5](https://www.acmg.net/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards/ACMG/Medical-Genetics-Practice-Resources/Genetics_Lab_Standards.aspx)[CAP Laboratory Accreditation Manual](https://elss.cap.org/elss/ShowProperty?nodePath=/UCMCON/Contribution%20Folders/DctmContent/education/OnlineCourseContent/2017/LAP-TLTM/misc/lam.pdf)[WADA International Standard for the Protection of Privacy and Personal Information (ISPPPI) 10.3](https://www.wada-ama.org/en/resources/world-anti-doping-program/international-standard-protection-privacy-and-personal) | **27.3** The system shall allow authorized individuals to de-identify select data in the system, including but not limited to names, geographic locations, dates, government-issued identification numbers, telephone numbers, email addresses, full-face photos, and other personal identifiers. |  |
| [45 CFR Part 164 Subpart E](https://www.law.cornell.edu/cfr/text/45/part-164/subpart-E)[NIST 800-53, Rev. 5, AC-6](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **27.4** The system shall be able to verify and ensure that users authorized to view de-identified data are also not a member of a role that permits access to information that re-identifies the data, i.e., segregate duties. |  |
| [NIST 800-53, Rev. 5, SI-19(7)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **27.5** The system should use validated algorithms to de-identify data in the system and be validated to use those algorithms. |  |
| [NIST 800-53, Rev. 5, PT-4 and PT-4(3)](https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final) | **27.6** The system should provide tools or mechanisms for recording the consent—and revocation of consent—of individuals who wish to allow—or disallow—their personally identifiable information to be processed, stored, and otherwise managed. |  |