2017

Microbiology Research Associates

List of Services

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PHARMA/BIOTECH/DEVICE/COSMETICS/DQSA

LIST OF SERVICES

EFFECTIVE DATE: FEBRUARY 2017

Microbiology Tests ***Pharma/Biotech/Medical Devices***	**Time From Sample Receipt to Final Report** ***In Business Days***	**Comments**
USP <61> <62> Suitability Tests (Methods Validation) Price Includes Complete Suitability Test including Total Aerobic Microbial Count (TAMC) and Total Yeast and Mold Count (TYMC) and 4 Pathogens	***5 Days***	Validation of the test method per product for USP <61> <62> includes growth promoted media for bacteria, yeast and mold, calibrated pipettes and balances and ATCC cultures. Each dilution is considered a sample. Products tested with and without neutralizers are considered separate samples.
USP <61> <62> Product Testing (TAMC, TYMC Specified Microorganisms for 4 pathogens)	***5 Days***	Test to determine Total Number of Bacteria, Yeast and Mold in Product including low limit detection of objectionable organisms.
USP <61> <62> Growth Promotion Testing (Plates)	***5 Days***	Growth Promotion Testing of Media in accordance with USP <61> <62>.
Microbial Identifications **A.** I.D. of Microorganisms to Genus and Species **B.** Genus ID **C.** Gram Stain **D.** Coagulase **E.** Colony Morphology **F.** DNA	***5 Days***	Identification of Microorganisms. Includes microscopy, staining, morphology, biochemical tests, metabolic profiles to determine microbial ID for bacteria, yeast and mold. Utilizes validated Vitek 2 Automated ID System.
USP <51> Preservative Effectiveness Test/EP 5.1.3 Efficacy of Antimicrobial Preservation *Includes 5 USP Challenge Organisms*	***33 Days***	Determines efficacy of product/preservative systems with direct inoculation of microbial challenge organisms. Includes duplicate plating per USP <51> effective date October 2015.

**Product tested with and without neutralizers are considered separate samples. Each dilution/test volume are considered separate samples. For product validations, MRA recommends 3 lots of product be validated per recent FDA-483 observations.*

Microbiology Tests ***Pharma/Biotech/Medical Devices***	**Time From Sample Receipt to Final Report** ***In Business Days***	**Comments**
USP <51> Suitability Test (Neutralizer Validation) *Includes 5 USP Challenge Organisms*	***7 Days***	Includes duplicate plating and expanded neutralizer validation per USP <51> effective date October 2015.
Bacterial Water Analysis (Total Bacterial Count, Total Gram Negative Count, Presence of Coliforms)	***5 Days***	Includes heterotrophic plate count, total gram negative count, and presence of coliforms. Samples tested at multiple volumes (1mL, 10mL, 100mL) are considered separate samples.
Bacterial Endotoxin Test for Water Samples UPS <85> Gel Clot, Chromogenic, or Turbidimetric Methods	***2 Days***	Detects and quantifies endotoxins in water samples from RODI/WFI Systems.
USP <1112> Water Activity Testing (Aw) of Non-Sterile Pharmaceuticals (Solids/Oils/Creams)	***2 Days***	Application of water activity for determination of potential microbial growth proliferation.
Bioburden Recovery Factor for Medical Devices *(Requires 5 Units)*	***5 Days***	Bioburden validation to determine recovery factor for medical device compliance to sterilization validation.
Bioburden Test: - Pour Plate - Membrane Filtration	***5 Days***	Test to determine Total Number of Bacteria, Yeast and Mold in Product.
USP <71> Growth Promotion Test (Broths) Includes 3 organisms. For additional organisms	***3 to 7 Days***	Growth Promotion Testing of Broths.
USP <71> Sterility Suitability Test (Required to be Performed One Time on Each Formulation) (B+F Test) If subculture needed	***7 Days*** ***Additional 4 days for subculture***	Validation of the test method per product for USP <71> Sterility Testing.

**Product tested with and without neutralizers are considered separate samples. Each dilution/test volume are considered separate samples. For product validations, MRA recommends 3 lots of product be validated per recent FDA-483 observations.*

Microbiology Tests ***Pharma/Biotech/Medical Devices***	**Time From Sample Receipt to Final Report** ***In Business Days***	**Comments**
USP <71> Membrane Filtration Sterility – Aqueous Solutions If subculture needed *For Large Volume Parenterals (LVP) Call for Quote*	***14 Days*** ***Additional 4 days for subculture***	Test for sterility of the sample, includes growth promoted media, validated equipment. Sample volume and sample quantity are per USP <71> Table 2 and Table 3.
Current USP <71> Direct Transfer Sterility Test – Solids If subculture needed *For large devices – Call for Quote*	***14 Days*** ***Additional 4 days for subculture***	Test for sterility of the sample, includes growth promoted media, validated equipment. Sample volume and sample quantity are per USP <71> Table 2 and Table 3.
AAMI Sterility Suitability (requiring subculture)*	***7 Days*** ***Additional 4 days for subculture***	Validation of the test Method
AAMI Sterility (requiring subculture) Minimum of 100 units/lot required	***14 Days*** ***Additional 4 days for subculture***	Test for sterility of the sample, includes growth promoted media and validated equipment.
USP <85> Bacterial Endotoxin Test Validation Gel Clot Method Includes: <u>Preliminary Tests</u> Performed in Duplicate, Non-Inhibitory Concentration, Spiked Series, Standards, Unspiked Series <u>Inhibition Series</u> Performed in Quadruplicate, Validates LAL Method for Testing Product	***2 Days***	Validation of the test method per product for USP <85> Endotoxin Testing using Gel Clot, Chromogenic or Turbidimetric methods. Determines which dilution of product to carry out USP <85> Inhibition/Enhancement Test.

**Product tested with and without neutralizers are considered separate samples. Each dilution/test volume are considered separate samples. For product validations, MRA recommends 3 lots of product be validated per recent FDA-483 observations.*

Microbiology Tests ***Pharma/Biotech/Medical Devices***	**Time From Sample Receipt to Final Report** ***In Business Days***	**Comments**
USP <85> Bacterial Endotoxin Test of Product *Product Tested in Duplicate at One Dilution above NIC, Positive Control and Negative Control*	***2 Days***	Detects and quantifies endotoxins from gram negative bacteria in product. Gel Clot, Chromogenic, or Turbidimetric methods. ***NOTE:*** *Required Endotoxin Limit to be Provided by Client, and NIC to be Performed*
USP <85> Endotoxin Challenge Vials (ECV)	***2 Days***	ECV's are used to determine endotoxin control in depyrogenation validation studies
Environmental Monitoring (E/M) *Contact Plates/Gravity Plates*	***5 Days***	Determines cleanliness of manufacturing areas, production rooms and cleanrooms. Includes growth promoted media for bacteria, yeast and mold. Includes validated incubation, laboratory analysis, colony counts, genus ID and final reports.
E/M Risk Assessment (FMEA) for sampling Site Determination per Regulatory Guidance	***15 Days***	MRA will perform a failure mode effectivity analysis for risk assessment of product failure in establishing E/M sample sites.
Sterility Testing of Biological Indicators	***7 Days***	Verifies microbial lethality of sterilization methods (steam sterilization, EO gas, etc.)
Biological Indicator (BI) Population Verification (4 BI's Required) Purity Testing	***3 Days*** ***2 Day***	Verifies accuracy and purity of manufacturer's label claim for spore populations.

Microbiology Tests ***Cosmetics***	**Time From Sample Receipt to Final Report** ***In Business Days***	**Comments**
CTFA Preservative Effectiveness (PET) Includes 5 Organisms *Day 14 Rechallenge* CTFA Suitability Test (Neutralizer Validation) Includes 2 organisms For additional organisms	***33 Days*** ***33 Days*** ***7 Days***	CTFA PET will test cosmetic for preservative effectiveness with multiple challenge organisms to determine microbial lethality over time. Rechallenge at Day 14 will add more robust methodology for overall preservative effectiveness.
Initial Total Count Includes Total Aerobic Microbial Count (TAMC) and Total Yeast and Mold Count (TYMC)	***5 Days***	Total count will be performed upon sample receipt to determine overall microbial cleanliness and baseline for PET.
CTFA M-1/M-2 Suitability of the Test Method	***7 Days***	Validation of the test method per product for CTFA M-1/M-2 includes growth promoted media for bacteria, yeast and mold, calibrated pipettes and balances and ATCC cultures. Each dilution is considered a sample.
CTFA M-1 Determination of the Microbial Count of Cosmetic Products & M-2 Examination for *Staphylococcus aureus, Escherichia coli* and *Pseudomonas aeruginosa* M-1 Only M-2 Only	***7 Days***	Test to determine total number of bacteria, yeast and mold in product including low limit detection of objectionable organisms.
USP <1112> Water Activity (Aw) of Non-Sterile Pharmaceuticals (Solids/Oils/Creams)	***2 Days***	Application of water activity for determination of potential microbial growth proliferation.

**Product tested with and without neutralizers are considered separate samples. Each dilution/test volume are considered separate samples. For product validations, MRA recommends 3 lots of product be validated per recent FDA-483 observations.*

cGMP Consulting Services ***Pharma Validation/Biotech/Medical Devices***	**Comment**
Disinfectant Efficacy Testing USP <1072>	Coupon based protocol study for microbial lethality based on disinfectant, contact time and challenge organisms
Container Closure Integrity PDA TR27, USP <1207>	Protocol challenge with *Brevundimonas diminuta* immersion, incubation, observation, ID and final report
Cleanroom Validation (IQ, OQ & PQ) ISO 14644	Includes protocol development, install verification, HEPA testing, ISO certification, static/dynamic monitoring and summary reports
Water System Validation (IQ, OQ & PQ) USP <1231>	Includes protocol development, install verification, fluid engineering, chemical/microbiology testing and summary reports
Cleaning Verification Study 1 Contamination Control	Includes pre E/M, cleaning audit, post E/M, IDs, and final report. Can include on-site observation.
ISO 14644 Room, BSC, LFH, and Isolator Certifications	Includes filter leak scan, velocity profile, total airflow, air exchange rates, particle counts, return air flow, light levels, noise levels, temperature, relative humidity (Rh), and room differential pressure readings. USP <797> requires recertification every six months.
Airflow Pattern Testing and Video USP <797> & ISO 14644	Price per No. of cleanroom, BSC and HEPAs
ISO 11135 EO Sterilization Validation	Includes protocol, BI population, sterility and final report
ISO 11137 Gamma Sterilization Validation VD Max Method 1, Method 2	Includes bioburden recovery, sterility and suitability
Cleaning and Disinfecting Consulting & Cleaning Validation	On-site review and observation of cleaning function, SOP review, disinfectant preparation, mop strokes, coverage, contact times, rinse procedures, hard to clean areas and final report
Media Fill for Process and Equipment	Includes protocol, media GPT, incubation, observation, ID's and final report
Compressed Air Testing	Includes on-site testing, calibrated equipment and media for viables, non-viables, hydrocarbons, moisture, specialty gases and purity.
On-site EM Staffing by Certified Microbiologist	Includes on-site testing, calibrated equipment, GPT media and non-viable testing.

Educational Seminars* ***Drug/Device/Sterile Compounding***	**Comment**
Aseptic Processing Training	Aseptic technique discussion for contamination control, cleaning/disinfection, garbing (PPE), biological safety and cross contamination
Cleanroom Basics Training	Includes CR design and operation, gowning, basic microbiology & principles of disinfection, environmental monitoring and aseptic technique
Environmental Monitoring Training	Includes sample sites, risk assessment, viable/non-viable monitoring, media, GPT, equipment, calibration, volume, action/alert levels, techniques, PDA TR13, USP <1116>, EU Annex 1 and USP <797> specification*
Pharmaceutical Water Systems Training	Includes DI, RODI, WFI. Discuss water quality, system design, monitoring. USP/EPA criteria, sampling, TOC, conductivity and validation
cGMP Training	Training for current good manufacturing practices including standard operating procedures, good documentation practices, code of federal regulations, quality systems, personnel training and FDA oversight
Aseptic Water Sampling Training	Includes water system design and operation, water quality, water microbiology, disinfection, sampling procedures, aseptic technique, dead legs
USP <797> Sterile Compounding Training	Includes USP <797> sterile compounding regulations including risk levels, PEC/SEC design, environmental monitoring, action levels, CAPA, cleaning/disinfection, BUD, sterility, endotoxin, stability, sterilization and staff proficiencies
Cleaning and Disinfection Training	Includes disinfectant types, API, contact times, lethality, frequency, disinfectant preparation, mop strokes, coverage, direction and SOP compliance
Preservative Effectiveness Training	Includes USP <51> and CTFA procedures and categories. Discuss techniques, challenge organisms, pooling, neutralizer validation, toxicity and pass/fail criteria

*Includes: On-site visit with 1.5 hour didactic powerpoint lecture, educational booklets, proficiency self-test and individual attendance certificate. Maximum of 25 attendees. For larger groups, multiple visits can be scheduled at a discounted rate.

DQSA USP <797> <800> ***Sterile Compounding Compliance*** ***for 503 A/B Pharmacies***	**Comment**
USP <797> Compliance GAP Analysis	MRA will perform a GAP analysis report for <797> compliance assessment including on-site sterile compounding observation, facility design, E/M staff proficiencies, BUD, cleaning/disinfection, garbing, handwashing and CAPA.
Environmental Monitoring (E/M) On-Site Analysis can be provided per client request Enhanced Reports including graphical & Statistical Analysis can be provided per client request	Includes growth promoted media for bacteria, yeast and mold, calibrated air samplers and particle counters for sampling. Also includes validated incubation, laboratory analysis, colony counts, Genus ID and final reports.
Environmental Monitoring (E/M) Program and Implementation	MRA will setup a <797> compliant E/M program including standard operating procedures, sample site maps, action levels, frequency, room conditions, media, CAPA and retest.
ISO 14644 Certifications, PEC's and SEC's	Includes on-site HVAC engineer for HEPA integrity scans, air flow, velocity, differential pressure and particle counts for ISO 14644 certification. Quote based on number of cleanrooms, ISO 5 PEC's, Chemotherapy and Number of HEPAs.
Air Flow Visualization (AFV)	Includes video smoke study to evaluate air flow patterns in cleanroom. AFV includes protocol on-site HVAC engineers, video with voice over, WFI smoke generator, featuring dynamic testing.
Staff Proficiency Testing and Program Implementation • Media Proficiency • Hand Hygiene • Aseptic Technique • Cleaning and Disinfection • Personnel Garbing • Sterile Gowning Proficiency	MRA will observe and test staff to demonstrate <797> proficiency. Testing will include on-site microbiologist and growth promoted media. Includes media, validated incubation, laboratory analysis, colony counts, and final reports.
Assessment of 3rd Party High Risk Compounder (503B) *Additional days needed*	MRA will assess 503B operations for compliance to DQSA, <797> and cGMP. Report will include observations and recommendations for CSP quality risk assessment.
Process Validation Simulations (Automated Compounding Devices & TPN Pumps and Robotics)	MRA will setup protocol based media fill for TPN pumps, repeaters and compounding robots including growth promoted media in multiple type containers.
Sterilization Validation	MRA can provide validation of terminal sterilization processes including steam, filtration, gas or radiation.

DQSA USP <797> <800> ***Sterile Compounding Compliance*** ***for 503 A/B Pharmacies***	**Comment**
Compounded Sterile Products (CSP) USP <71> Sterility and USP <85> Endotoxin Testing	MRA will test CSP per USP <71> and <85> including suitability and inhibition method validations. *(10 sample minimum)*
USP <800> Hazardous Drug Chemo Wipe Testing	Includes on-site sampling, analysis and final reports. Testing includes 3 sample sites.
Corrective Action Preventative Action (CAPA) Maintenance, Consulting and Program Setup	Includes CAPA procedures, out of specification reports, root cause investigations and CAPA trending.
New Pharmacy Cleanroom Validation (IQ, OQ, PQ) Design, consult construction verification and HVAC qualification.	MRA will validate a new or upgraded cleanroom and verify design, operational and performance specifications. Quote based on number of cleanrooms, ISO 5 PEC's, Chemotherapy and Number of HEPAs.
Disinfection Efficacy/Cleanroom Cleaning and Disinfection Program Implementation	MRA will setup cleaning and disinfection program including procedures for disinfectant types, preparation, contact time, frequency, rotation, equipment and schedules.
Pharmacy Cleanroom Disinfection Educational Seminar for cleaners and environmental services personnel	Include educational seminar, SOP review, cleaning observation, equipment compliance, disinfectant types, contact times and frequency
BCG (TICE) Compounding Assessment Monitoring for mycobacterium bovis	MRA will assess BCG clinic for USP <797> Biohazard, USP<800> NIOSH MRA will monitor site for mycobacterium boris contamination
Viral Vector Compounding Assessment	MRA will assess viral delivery compounding for USP <797> Biohazard, USP<800> NIOSH

DQSA USP <797> <800> Educational Seminars* ***Sterile Compounding Compliance for 503 A/B Pharmacies***	**Comment**
Aseptic Processing Training	Aseptic technique discussion for contamination control, cleaning/disinfection, garbing (PPE), biological safety and cross contamination
Cleanroom Basics Training	Includes CR design and operation, gowning, basic microbiology & principles of disinfection, environmental monitoring and aseptic technique
Environmental Monitoring Training	Includes sample sites, risk assessment, viable/non-viable monitoring, media, GPT, equipment, calibration, volume, action/alert levels, techniques, PDA TR13, USP <1116>, EU Annex 1 and USP <797> specification*
Pharmaceutical Water Systems Training	Includes DI, RODI, WFI. Discuss water quality, system design, monitoring. USP/EPA criteria, sampling, TOC, conductivity and validation
cGMP Training	Training for current good manufacturing practices including standard operating procedures, good documentation practices, code of federal regulations, quality systems, personnel training and FDA oversight
Aseptic Water Sampling Training	Includes water system design and operation, water quality, water microbiology, disinfection, sampling procedures, aseptic technique, dead legs
USP <797> Sterile Compounding Training	Includes USP <797> sterile compounding regulations including risk levels, PEC/SEC design, environmental monitoring, action levels, CAPA, cleaning/disinfection, BUD, sterility, endotoxin, stability, sterilization and staff proficiencies
Cleaning and Disinfection Training	Includes disinfectant types, API, contact times, lethality, frequency, disinfectant preparation, mop strokes, coverage, direction and SOP compliance
DQSA Staff Educational Programs Includes: • USP <797> Overview • Sterile Compounding Basics • Environmental Monitoring Certification	MRA will provide 1.5 hour power point didactic presentation including educational booklets, self-assessment questionnaire and personnel certificates.

*Includes: On-site visit with 1.5 hour didactic PowerPoint lecture, educational booklets, proficiency self-test and individual attendance certificate. Maximum of 25 attendees. For larger groups, multiple visits can be scheduled at a discounted rate.

Administrative Services	Time From Sample Receipt to Final Report *In Business Days*	Comments
Consulting Time: 1 hour minimum	***NA***	For microbiological consult regarding contamination control, environmental monitoring, cleaning/disinfection, cleanroom validation, disinfectant efficacy, challenge assays, sterilization validation, USP <797>/503 A&B, sterile compounding, etc.
Document Retrieval Fee	***2 Days***	For misplaced and/or lost reports, documentation, raw data, regulatory requests, etc.
Out of Specification Report (OOS)	***7 Days***	For client requested OOS reports. MRA will investigate project related parameters for compliance.
Hazardous Waste Fee	***NA***	This covers disposal of small volume hazardous waste with approved vendor. For larger volumes, quote will be provided.
Shipping Fee	***NA***	If return shipment is needed, please specify carrier and account number. Actual shipment expenses are client responsibility.

- ***Costs include same day testing (receipt by 3pm) and laboratory reports***
- ***Payment terms: > $5,000, 50% due at quotation acceptance***
- ***Terms: payments are due within 30 days upon receipt of invoice***
- ***Please call for quote on volume pricing, new projects, consultation, protocol studies and regulatory remediation***

MRA thanks you for the opportunity to quote on your testing needs.