Annual Conference 2020

Advances & New Frontiers in Sterile Manufacturing Technology

Friday 17th & Saturday 18th April 2020
Mumbai , India

ISPE India is excited to present 2020 annual conference in Mumbai, India to discuss advances & new Frontiers in Sterile Manufacturing Technology.

The event this year will bring some key international experts representing Pharmaceutical and Bio pharmaceutical Industry to take a look at Technological Innovation, Emerging Global GMP regulations, current industry standards and some exciting new approaches to meeting product quality requirements.

The main focus of the conference will be novel techniques, equipment and technology, including the single use technology for commercial manufacturing which are constantly evolving and which are improving aseptic production capabilities.

The second focus area will be the European Medicines Agency's Annex 1 so as to have a common understanding of the right approach in its implementation, understand exactly what is required and its implications on microbial monitoring.

The third focus area of the conference will be highly potent/toxic products, which demand more stringent requirements for cleaning in multi-product facilities to prevent cross-contamination and provide occupational safety for the operators.

The fourth focus area of the conference will be rapid microbiological testing which can enable us to get product test results faster, allowing us to make the most appropriate decisions about our batches, saving valuable time and ensuring that product can reach the patient as quickly as possible while still assuring safety.

Other area like energy efficiency of the Heating, ventilation and air conditioning (HVAC) which within regulated environments is typically responsible for consuming up to 40-80% of a site's total energy will also be discussed.

SUMMARY OF PRESENTATIONS & SPEAKER CV

Mr. Gopal Nair Past Chairman & Director, Secretary - ISPE India
Program Host and Master of Ceremonies/Introduction to ISPE India
Mr. Gopal Nair graduated in Chemistry with honors from Ramnarain Ruia College, worked in Rapttakos Brett for a short while and he left for the UK for further studies. In the UK he obtained graduate and postgraduate degrees from London University while working in Sandoz. He joined GSK (Glaxo) and was transferred to Worli, Bombay. In Glaxo, he rose to the position of Technical Director on the Board of Glaxo India. Mr. Nair was active in OPPI and helped co-author the GMP Guide. He also helped in Training the Asia Pacific staff in Singapore. Mr. Nair teaches Narsee Monjee management school (NMIMS) as a visiting faculty, in its Pharmaceutical Management course. After retiring from GSK he helped in launching ISPE in India along with Mr. Ajit Singh.

What has changed for Annex 1 – it's implication for Sterile Manufacturing? Richard Denk – Skan AG, Senior Consultant Aseptic Processing & Containment.
Barrier Technologies are 46 times mentioned in the new Draft Annex 1. The Grade A critical zone shall be protected. What does this mean in terms of Grade A air supply, surface decontamination, aseptic transfers?
Richard Denk is working at the company SKAN AG, headquartered in Allschwil in the position Senior Consultant Aseptic Processing & Containment. Richard founded 11 years ago the Containment expert group of the ISPE D / A / CH. The Containment Group published the Containment Manual Richard was responsible for in September 2015. Richard is member of the PDA Isolator Expert Group and publisher of the PDA Paper "Isolator Surfaces and Contamination Risk to Personnel and Patient". Richard Denk is chapter leader for the new ISPE Baseline Guide for ATMPs. Furthermore, Richard is Member of the ISO TC 198 WG-9 Aseptic Isolator Group. Richard has spent more than 20 years with the subject production of highly active / highly hazardous substances and has developed the containment pyramid.

SUMMARY OF PRESENTATIONS & SPEAKER CV

Challenges in Implementing New EU GMP Annex 1 Draft requirements for sterile manufacturing - Dr. Nagarjuna AKULA, Vice President & Head Quality Operations, – A division of Biotechnology, Sanofi, India.

In the new Annex 1 the manufacture of sterile products is subject to special requirements in order to minimize risks of microbiological, particulate and pyrogen contamination. For this several key areas need be considered. These include facility, equipment and process design; use of appropriate current technologies to ensure protection and control of the product from potential extraneous sources of particulate; and microbial contamination such as personnel, materials and the surrounding environment. Personnel must have appropriate skills, training and attitudes with a specific focus on the principles involved in the protection of sterile product during the manufacturing, packaging and distribution processes. Processes and monitoring systems for sterile product manufacture must be designed, commissioned, qualified and monitored by personnel with appropriate process, engineering and microbiological knowledge.
This presentation will deal with some of the challenges in implementing New annex 1 requirements.

Dr. Nagarjuna AKULA, Presently working as Vice President & Head Quality operations, – A division of Biotechnology, Sanofi, India.

Dr. Nagarjuna AKULA possesses 29+ years' of progressive multiskilling experience in overall Quality Operations, Regulatory Affairs, R&D Quality, Project Management & Technology transfers in leading Pharmaceutical and Biotechnology companies like Sanofi, Dr. Reddy`s laboratories Ltd and Excel Industries Ltd.
His main exposure is in sterile manufacturing of pharmaceuticals, human vaccines and Active Pharmaceutical ingredients. He has expertise in inspection preparedness and handling regulatory inspections like USFDA, MHRA, and ANVISA and experience in responding to regulatory observations / US483s. He oversees all regulatory submissions and maintains relationship with key opinion leaders and regulatory officials and acts as a key liaison between the company and regulatory authorities. He is a specialist in establishing customized quality system at R&D facilities and technology transfers. He was responsible in building quality culture across all levels of the organization by engaging and influencing people positively.
Nagarjuna holds a Ph.D. in Chemistry from JNTU, Hyderabad and published papers in national and international journals.
Dr. Nagarjuna is a member of Sanofi Pasteur Global Quality Leadership Team & Corporate Quality Council. A member of PDA as well.

SUMMARY OF PRESENTATIONS & SPEAKER CV

How to make QRM of Aseptic Processing Better - Rishikesh Jaiwant, Director, Manufacturing & Operations – BAXTER

New draft Annex 1 provides general guidance that should be used for all sterile medicinal products and sterile active with respect to using the principles of Quality Risk Management (QRM), to ensure that microbial, particulate and pyrogen contamination associated with microbes is prevented in the final product.
It further specifies that Processes, equipment, facilities and manufacturing activities should be managed in accordance with QRM principles that provide a proactive means of identifying, scientifically evaluating and controlling potential risks to quality. Risk assessments should be used to justify alternative approaches to those specified in this Annex only if these alternative approaches meet or surpass the intent of the Annex.
European health authorities' inspectors will seek scientifically sound, unbiased risk assessments, and the use of QRM principles in the planning, design, control, monitoring, operation, and investigation of sterile product manufacturing processes. The industry must be prepared to develop and employ those QRM principles and risk management methods. This presentation will deal with some of the critical issues of QRM.

Rishikesh is the Plant Manager of Baxter Pharmaceuticals India, Ahmedabad since January 2019 and responsible for delivering manufactured products and inter-plant services that meet safety, quality, cost and on-time delivery goals in support of associated business objectives.
Rishikesh previously worked for GlaxoSmithKline (GSK) and has 21 years' experience in pharmaceutical and vaccines manufacturing in FDA regulated facilities. His most recent position was Site Director at the Ankleshwar (India) Vaccine Plant.
Rishikesh has global experience with GSK which includes 4 years at the Marietta (PA), USA vaccine manufacturing site

His experience includes working in Operations, Quality, Project Management, and Operational Excellence & Technical Trainings. Rishikesh holds a postgraduate in Pharmaceutical Chemistry from, Indore, India.

Microbiological Implications of the EU Annex 1 Revision
Ziva Abraham, President and Founder of Microrite, Inc

The premise of the EU Annex 1 revision is via adoption of the principles of Quality Risk Management (QRM), to ensure that sterile products are free of microbial, particulate and pyrogen contamination. Though the intent is to provide guidance for sterile medicinal products; some of the principles and guidance can be applied other products that are not intended to be sterile. The most relevant changes in the annex are the use of appropriate current technologies, sufficient knowledge and expertise in relation to the products and assessment of contamination holistically. This presentation will highlight the changes, provide clarification and explore the impact on each system as well as the overall bearing of the changes on current practices. Sections of the revision; Personnel, Premises, Equipment, Utilities, Production

Specific Technologies, Viable and Non-Viable Monitoring and Quality Control will be discussed in relation to microbiological implications due to the proposed changes.

Ziva Abraham is the President and Founder of Microrite, Inc., a California based firm providing consulting and training services for medicinal product manufacturing. The team assembled by Ziva include; facility, airflow, particulate, sterilization, quality, validation and microbiology experts. Ziva's team participates in industry standards and guidance organizations (IEST, AAMI, ISO, ASHRAE, USP and IP) as board or expert committee members.

Ziva has over 35 years of clinical and pharmaceutical microbiology as well as mycology experience. She has received her Master's degree in microbiology with a focus on Mycology and has conducted research on developing microbial Insecticides utilizing entomogenous bacteria and fungi towards her Ph.D degree. Her career spans from founding and managing clinical laboratories for Maccabi Medical in Israel to working with pharmaceutical and medical devices companies.

As the principal microbiologist, and a part of her technical team, Ziva has helped large and small pharma, medical device, and drug device combination as well as diagnostic companies. The roles varied from development of proactive contamination control strategies through pragmatic risk assessment, troubleshooting contamination issues and helping with FDA 483/warning letter remediation activities.

Rapid and Alternative Testing Methods – How to Implement quality and data integrity in a Modern Lab

Dr Lucia Ceresa, Senior Technology Manager, Charles River, USA

The implementation of advanced microbiological methods should be part of continuous improvement in modern Pharma and Bio Pharma manufacturing. Most recent Global Regulatory updates and guidances are supporting the introduction and use of modern technologies. During this presentation an in-depth overview of the changes in requirements will be provided and an approach for the validation and successful implementation of these methods into routine QC will be shared.

Dr. Ceresa is a Senior European Technology Manager at Charles River Microbial Solutions. She is also a Vice President at present of PDA Italy Chapter, being member of PDA since 2005, and part of the Steering Committee since 2009. Graduated at the University of Milan on 1981 and specialized on Microbiology, Dr. Lucia Ceresa has an extensive international experience.

After 10 years of Permanent Qualified Teacher on Chemistry and microbiology, she started her career within the Life Sciences Industry at Millipore Corp., Gelman Sciences Corp, Pall Corp. and Particle Measuring Systems.

Her expertise includes pharmaceutical aseptic production and all aspects of validation and quality control, particularly focus on GMP's and of Alternative Microbiological Methods.

SUMMARY OF PRESENTATIONS & SPEAKER CV

Data based approach to Continuous Control Strategy and Real-Time Release
Vipul Doshi - President Global Quality Assurance, - Cadila Healthcare Limited

Medicinal products must comply with their approved specifications before they are released into the market. Compliance with release specifications can be demonstrated by performing a complete set of tests on the active substance and/or finished product, according to the approved specifications. Under certain conditions, an alternative strategy to systematic end product testing is possible.
This presentation will discuss this concept, which has been applied to sterility testing of terminally sterilized products and has become associated with parametric release applications.
Recent guidelines adopted in the ICH context (ICH Q8, Q9 and Q10) have made it possible to apply a similar release decision process to tests other than sterility, this approach has been called Real Time Release Testing (RTRT). This presentation addresses the requirements for application of RTRT to different kinds of products e.g. chemical and biological products and its scope is to facilitate the introduction of RTR testing.

Vipul Doshi is the President Global Quality Assurance, International Regulatory Affairs, Pharmacovigilance, EHS and API R&D in Cadila Healthcare Limited (CHL) at Ahmedabad. Mr. Vipul Doshi has joined Zydus group about 4 years ago to head Quality and Regulatory function at Global level.
He has distinguished career of over 30 years in reputed Pharmaceutical Industries in India and helped Industry to benefit from his expertise in his chosen field. He has developed motivated teams wherever he has worked, and has been a good trainer, guide and motivator to all those who have worked with him.

Low Endotoxin Recovery (LER) – Facts and Myths Explained
Alan Hoffmeister, Senior Global Technology Manager Charles River

In 2013 the efficacy of the LAL test was called into question, when Chen and Vinther presented data where known concentrations of LPS where added to undiluted samples of final product, which the LAL reagent failed to detect. This phenomenon was described as Low Endotoxin Recovery or LER. This presentation will set out to review the scientific data surrounding the topic of Low Endotoxin Recovery. It will address the structure of LPS and Naturally Occurring Endotoxin (NOE), and present data describing the differences between the two in the presence of an LER inducing matrix. It will include data from different endotoxin detection methods and explore how each reacts with respect to LER. It will also examine how microorganisms adapt to their environment and the impact this has on LER.

Alan Hoffmeister is the Senior Global Technology and Market Development Manager for Charles River, Microbial Solutions Division, specializing in the Bacterial Endotoxins Test. Alan's experience with the Bacterial Endotoxins Test (BET) dates to 1988, since when he has been actively involved in all aspects of the assay. Alan has directed

workshops and training courses and lectured internationally on a variety of BET topics including, amongst others, LAL Methodologies, Product Validations, Interference Matrices, Data Integrity and BET Regulatory Affairs. He has also contributed to the development of BET protocols, technical guides and fact sheets.

Data Management throughout the Monitoring of a Sterile Manufacturing Environment- Rob Lutskus, Associate Director, Commercial Operations for Lonza Bioscience Informatics,

During this presentation we will discuss:

- Types of data generated on the manufacturing floor and in the lab
- Data Lifecycle for the types of data generated
- Criticality of the data – Reportable data vs Informational
- Data strategy for removing paper from the process associated with the raw material handling, manufacturing process and laboratory handling of the samples
- Integrity of the data generated through the process
- How do you select and implement systems that will maximize the value of your data and successfully execute on all of these various priorities?
- Can you navigate moving from a paper based or out dated system to newer technologies?

Attendees will be able to evaluate the existing data processes and systems in their facilities and understand the steps needed to bring the facility up to date, while recognizing that these improvements can provide a tangible benefit, rather than simply a cost.

Ultimately, what is the value of your data?

Rob Lutskus is a subject matter expert on laboratory informatics within quality control for the bio-pharmaceutical industry. Currently, Associate Director, Commercial Operations for Lonza Bioscience Informatics.
Rob has worked in QC laboratories and Laboratory Informatics for almost 20 years, originally a QC microbiologist; Rob has worked for Merck, Hoffman La Roche and Baxter before joining ImClone Systems in Branchburg, NJ. In 2007, Rob led the original implementation of MODA EM™ as a custom solution. The custom solution was upgraded to the first release of the commercial solution, shortly after. He joined Lonza in 2010. Since joining Lonza he has worked with numerous quality organizations to implement best practices while executing their MODA-EM™ projects. Rob is an active member in a variety of industry organizations, including the Parenteral Drug Association and ISPE. He is also a contributing author to Environmental Monitoring: A Comprehensive Handbook, Volume 3.

SUMMARY OF PRESENTATIONS & SPEAKER CV

Approaches to Regulating Innovation: Industry Perspective on CMC Challenges and Opportunities -Nina S. Cauchon, Director Regulatory Affairs CMC, Amgen Inc

In the second decade of the 21st century, the pace of innovation in the pharmaceutical industry has accelerated tremendously. Advances in science, engineering, and information technology will continue to be the drivers for future evolutionary and disruptive enhancements in the medical field. Ongoing efforts to enhance drug product quality and reliability of drug supply chains include continuous manufacturing and sophisticated analytical methodologies. Transformative efforts in biology are resulting in an explosion of novel modalities and therapies entering the clinic, with the biotechnology revolution well under way. This talk will present an overview of the landscape for innovative modalities and emerging technologies in the field of human therapeutics, and the regulatory CMC challenges associated with their product development and approval.

Gap Analysis:

In the future, the rapid rise of emerging technologies and novel modalities will necessitate the equally swift evolution of efficient and harmonized regulatory frameworks to ensure global patient access while still safeguarding the expected standards for quality, safety, and efficacy. While incredible medical progress has been made, and some of these scientific discoveries are truly trailblazing in nature, these advances also add to the current escalation of development costs for new medicines. Timeliness and efficiency in the global regulatory environment could in turn make it more cost-effective to encourage the progress of further scientific innovation in the development of medicines for the treatment of grievous illness.

Nina S. Cauchon, PhD, has worked at Amgen Inc. in Thousand Oaks, CA, since 1998 and is a Director in Regulatory Affairs – CMC leading Advocacy and External Engagement outreach. She has been a Global Regulatory CMC Lead for early phase to commercial programs, including both small molecules and biologics, and prior to that she was a director leading Analytical Development within Pharmaceutics/Process Development. She holds a PhD in Medicinal Chemistry from the School of Pharmacy at Purdue University, and a RAC certification from RAPS.

She is the current chair of the AAPS CMC Community, and has been a member of its steering committee (which organizes the annual FDA-Industry CMC Regulatory Exchange Forum) for the past 8 years. She is active on the ISPE Expedited Regulatory Pathways work stream in PQLI. She is also active in other external organizations and organizing committees including CASSS, PQRI, BIO, and PhRMA, and is the PhRMA Deputy Topic Lead on the ICH Expert Working Group for ICH Q14/ICH Q2(R2) – Analytical Procedure Development/Validation.

Her areas of interest are: regulatory CMC challenges for innovative modalities and emerging technologies, CMC aspects of expedited review pathways, regulatory harmonization, and science and risk-based approaches to regulations.

SUMMARY OF PRESENTATIONS & SPEAKER CV

HPAPI Production Suite and Lyophilization Processes- Critical Design considerations & Qualifications - Richard Denk – Scan AG, Switzerland

More than 700 Bio Pharmaceutical Products right now in pre-clinical and clinical studies which are considered as high potent. Many of them will come to the market the next few years. What requirements are needed to prevent cross contamination in shared facilities.

Richard Denk is working at the company SKAN AG, headquartered in Allschwil in the position Senior Consultant Aseptic Processing & Containment.
Richard founded 11 years ago the Containment expert group of the ISPE D / A / CH. The Containment Group published the Containment Manual Richard was responsible for in September 2015.
Richard is member of the PDA Isolator Expert Group and publisher of the PDA Paper "Isolator Surfaces and Contamination Risk to Personnel and Patient".
Richard Denk is chapter leader for the new ISPE Baseline Guide for ATMPs.
Furthermore, Richard is Member of the ISO TC 198 WG-9 Aseptic Isolator Group.
Richard has spent more than 20 years with the subject production of highly active / highly hazardous substances and has developed the containment pyramid.

Technology Transfer Essentials for Bio Pharmaceuticals- Sarel Chen Tov, CEO Biopharmax Group, USA

The key objective of the transfer is to run the manufacturing process at the receiving site with no or minimal changes from the original process developed at the sending site. Therefore, most of the responsibilities lie with the technology-receiving site. This makes the technology transfer of a biopharmaceutical manufacturing process challenging and any deficiency in technology transfer results in serious loss of time and resources. Although a transferred process should ideally remain the same as the original, in practice the process always undergoes some adaptation at the receiving site, mostly due to the difference in equipment between the sending and receiving sites as well as the need for scale-up of the entire process. The success of technology transfer relies primarily on the adaptability of the production process itself as well as communication between sending and receiving sites. A systematic transfer methodology provides the best chance of a successful technology transfer. This presentation will deal with some of these challenges and how to implement successful transfer.

Sarel Chen Tov is expert in design and construction of API, Pharma and Biotech projects to FDA / EMEA standards and has near 20+ years of experience. During the years he obtained a unique expertise in efficient and innovative plant design to suit the business case, optimize Capex and Opex providing the client a competitive edge in the marketplace. He is globally renowned name in Pharma & Biotech industry for his expertise in Process & Layout Designs, scale-up and Technology Transfer.

SUMMARY OF PRESENTATIONS & SPEAKER CV

How do manage Clean Room Cost - Quality and Environmental Sustainability without compromises. Keith Beattie, Director, EECO2 - Energy Efficiency Consultancy Group Limited

Maintaining and improving GMP compliance of cleanroom manufacturing operations is a mandatory requirement for all pharmaceutical manufacturers. In addition, cost and sustainability of manufacturing operations are an increasing focus, especially given the high-energy consumption in most cleanrooms. In this talk, it will be shown how quality, efficiency and costs are related and how most manufacturing cleanrooms can be improved so that they deliver high quality environments, safely and efficiently, with significant cost reduction. It will include case studies from India and other regions, where pharmaceutical manufacturers have successfully improved their cleanroom operations in both sterile and non-sterile production.

Keith has over 20 years experience in the pharmaceutical industry in engineering, operations and facilities/utilities management. Most recently, he joined EECO2 Limited, a specialist-engineering consultancy focused on supporting global pharmaceutical and biotech clients with identification and delivery of energy and water reduction opportunities. The company has global expertise in cleanroom, energy efficient design, operations and GMP Quality compliance and combines these aspects to help clients create new high quality and efficient manufacturing operations and modify existing facilities to reduce cost and improve quality. Keith was a key contributor to developing recently published ISO 14644-16 (energy efficiency in cleanrooms) and is a member of ISPE HVAC/Sustainability COP steering committee. He is a Chartered Engineer, Chartered Energy Manager, ESOS (Energy) Lead Assessor and member of The Institute of Directors.

USFDA Inspectional trends related to smoke studies and points to consider - Daniel J. Roberts, Senior Specialist, Hogan Lovells US LLP

USFDA guidance document “Sterile Drug Products Produced by -Aseptic processing Current Good Manufacturing Practices September 2004” states that it is crucial that airflow patterns be evaluated for turbulence or eddy currents that can act as a channel or reservoir for air contaminants (e.g., from an adjoining lower classified area) and that the studies should be well documented with written conclusions, and include evaluation of the impact of aseptic manipulations (e.g., interventions) and equipment design.“
However, recent inspectional trends show that smoke studies continue to be a focus for regulatory inspections and significant observations have been documented in both Form FDA 483 and Warning Letters issued by the Agency. There are some key points to consider for sterile manufacturers conducting these smoke studies.

Daniel J. Roberts, Senior Specialist Pharmaceutical and Biotechnology Practice, has over 18 years of government regulatory and pharmaceutical/biopharmaceutical industry experience. He was a United States FDA investigator for 8 years including 2 years overseas as the primary point of contact for conducting pharmaceutical inspections at the FDA India Office located at the United States Embassy in New

Delhi, India.

As an investigator, Mr. Roberts conducted Pre-Approval Inspections (PAIs) and for-cause investigations and inspections of pharmaceutical manufacturers of human and veterinary sterile and non-sterile finished dosage forms and APIs worldwide. During his tenure at the Agency, he conducted over 100 pharmaceutical inspections as a lead investigator. Mr. Roberts has graduated from the U.S. FDA Biotechnology Partnership training through North Carolina State University where upscale fermentation and bioreactor processes, as well as downstream purification processes, aseptic processing and quality control laboratories were covered. Prior to joining U.S. FDA, Mr. Roberts worked in the biopharmaceutical/biotechnology industry for 8 years specializing in quality control analysis for large molecule biotherapeutics. Mr. Roberts has also worked in scale-up bacterial and yeast fermentation process development to optimize parameters prior to handing over the process to the commercial production operations in a GMP facility.

As a Senior Specialist at Hogan Lovells, Mr. Roberts successfully guides domestic and international clients in the preparation for and management of successful U.S. FDA pre-approval inspections and systems based inspections. He evaluates and assesses pharmaceutical quality systems and specializes in detecting and remediating data integrity concerns and evaluating compliant automated manufacturing process and related computerized systems. He provides guidance and assists clients in responding to FDA-483 observations, correspondences with regulatory agencies, and mock U.S. FDA facility audits.

Mr. Roberts has a B.S. in Molecular Cellular and Developmental Biology from the University of California-Santa Cruz, California.

FDA citation trends with respect to Sterile Product Manufacturing

Ziva Abraham, President and Founder of Microrite, Inc

This presentation will focus on the current trend of regulatory observations for sterile product manufacturing. The observations expanded upon will include, recurrent observations seen across the globe, repeat observations that are specific to certain functions and well as discussion on the reasons behind such observations. Gain an understanding of this trend of observations and why regulators consider them as GMP violations. Understand how the 483-observation rate provides a window into the FDA's current thinking about compliance priorities. Comprehend the impact of these observations on other GMP functions, which observations are the most egregious and could result in some sort of a regulatory action. Common errors made which may lead to lack of confidence on the part of regulators. Gain a science-based understanding on the causes of this recent trend of observations.

Ziva Abraham is the President and Founder of Microrite, Inc., a California based firm providing consulting and training services for medicinal product manufacturing. The team assembled by Ziva include; facility, airflow, particulate, sterilization, quality, validation and microbiology experts. Ziva's team participates in industry standards and guidance organizations (IEST, AAMI, ISO, ASHRAE, USP and IP) as board or expert committee members.

Ziva has over 35 years of clinical and pharmaceutical microbiology as well as mycology experience. She has received her Master's degree in microbiology with a focus on Mycology and has conducted research on developing microbial Insecticides utilizing entomogenous bacteria and fungi towards her Ph.D degree. Her career spans from founding and managing clinical laboratories for Maccabi Medical in Israel to working with pharmaceutical and medical devices companies.

As the principal microbiologist, and a part of her technical team, Ziva has helped large and small pharma, medical device, and drug device combination as well as diagnostic companies. The roles varied from development of proactive contamination control strategies through pragmatic risk assessment, troubleshooting contamination issues and helping with FDA 483/warning letter remediation activities.

Automation in Sterile Processing - Ganadhish Kamat Global Head Quality & Executive Vice President, Dr. Reddy's Laboratories

Mr. Kamat will talk about how Automation can help in Sterile Processing. He will also share the challenges faced, lessons learned and how automation has helped the company achieve excellence

Ganadish Kamat is currently Global Head of Quality & Executive Vice President at Dr. Reddy's Laboratories and has 30+ years of experience in leadership roles in the pharmaceutical industry in various leading Indian and International companies in India and the US.

Mr. Kamat holds a Master's degree in Pharmacy and a Diploma in Business Management.

He is a member of the International Society for Pharmaceutical Engineering (ISPE), the expert committee of Indian Pharmacopoeia and the Quality Forum of the Indian Pharmaceutical Association (IPA).

Pharmaceutical Product Quality: Visual Inspection – DR. A. RAMA MOHANA RAO, Chief Quality Officer, Aurobindo Pharma

Visual inspection continues to be an important element of the manufacturing process and the quality assurance of injectable products. Product inspection provides necessary information for lot release, and, coupled with defect identification,

contributes to a strategy of continuous process improvement. Inspection may be accomplished manually or using a variety of automated inspection technologies. Particulate matter in sterile parenteral products is regarded a critical quality attribute, impacting patient safety.

This session will cover the latest trends in visual inspection including the regulatory and compendial requirements that govern the inspection process. Specifically, the implementation of life cycle approach to visual inspection and defect control will be discussed. Manual inspection continues to provide the critical reference method for all compendial inspection activity. This session will also look at use of particle standards to qualify manual and automated inspection systems. The control of critical inspection parameters and the development of an inspection method for difficult to inspect products. Also, the holistic VI process will be covered with discussions on control strategies such as AQL and defect trending. Key elements of a basic inspection, visual inspector qualification program and sampling process along with special considerations for difficult to inspect parenteral (DIP) products will also be covered.

Dr. A. Rama Mohana Rao has received his Ph.D in Pharmaceutical Analysis from Andhra University in 1988. He was awarded best thesis in 1987-88 from Andhra University for his research work. Prior to moving to Aurobindo, he worked with Ranbaxy laboratories Limited, Cadila Pharmaceuticals and Biological E. Limited in senior industry positions.
As of 2001, Dr. Rao has been working with Aurobindo Pharma Ltd, he has 31 years of experience in various disciplines in the Pharma industry. Dr. Rao is the Chief Quality Officer, managing quality related functions of the company which include design and implementation of a plethora of companywide quality policies and procedures. He has been instrumental in implementation of several automations to enhance paperless systems within the firm thus allowing for a reduction in human errors. He has expertly navigated various inspections of regulatory bodies such as USFDA, MHRA and ANVISA to name a few.

Single-use systems for commercial drug production: Navigating the evolving regulatory expectations

Swapnil Ballal Member, Disposables COP- ISPE, Partner CRAMbridge E-learning & Q-Exl Partners

Use of single-use components and systems for manufacturing therapeutics is witnessing a boom especially for small batch size finished product manufacturing. The single-use technology, with its origin in the upstream processing of biotherapeutics, has matured and its adoption has transitioned from clinical batches to commercial GMP manufacturing. Evolving regulatory framework and industry

standards, involvement of multiple suppliers and limited experience of the end user presents new challenges in both science and GMP compliance.

This session will provide:

- Overview of existing and upcoming regulations related to qualification/validation of Single-use system
- An update on key areas of regulatory concerns and observations
- Risk assessment and qualification of product contact components
- Approaches to reduce the compliance burden and leveraging vendor data

Swapnil Ballal is a seasoned quality assurance professional with multi-functional background and experience of over 23 years in bio/pharmaceutical industry.

He has served in some of the leading biopharma companies in India including Biocon, Intas, Dr. Reddy's and GE Healthcare in leadership roles.

As an active member of ISPE he has contributed to ISPE Good Practice Guide- Single Use Technology and ISPE Baseline Guide: Biopharmaceutical Manufacturing Facilities, 2nd Edition. He was also a Co-Chair of ISPE's Disposables COP.

Proper Use of Extractables Data for Single Use Systems – Aspects Beyond Measurements

Dr. Armin Hauk Lead Scientist at Sartorius Stedim Biotech GmbH, Goettingen

This presentation describes an approach to establish a methodology based on basic physical principles to scale and combine extractables data of SUS/SUT and to extrapolate extractables towards potential leachables in risk assessments.

Extractables protocols and methods for components of single use devices have been intensively discussed and several proposals for standardized methods are available today; but two major questions, which cannot be solved by means of analytics alone, were not appropriately addressed so far:

1) How can extractables data be obtained for entire devices of different sizes and for even complex device combinations?

2) How can extractables be extrapolated toward potential leachables, and be finally used in a risk assessment of downstream processing?

The first aspect is critical, as devices in different sizes and assemblies - even as device combinations of various suppliers - are on the market, requested by the industry. Considering the vast number of available SUS, it is easily conceivable that it is impossible to conduct extractables studies for each and every possible device and device combination.

The second aspect is critical, because no quantitative approach exists today, which would allow to estimate potential leachables concentrations in products after downstream processing. For the risk assessment of downstream processing only the vague, non-quantitative phenomenological concept of "proximity to patient" is currently available as mitigation tool.

The author will discuss that the commonly applied empirical methods to extrapolate extractables based on intuitive "worst case" assumptions are not sufficient to describe an extraction in a depletive/comprehensive way. Instead of that a concept will be discussed to describe extraction experiments solely based on physical-chemistry principles (i.e. partitioning, phase-transfer and diffusion). This concept is used to establish a methodology, which allows to scale and combine extractables data for components, entire devices and complex assemblies. This methodology can be extended to be used in risk assessment exercises of parts or entire down-stream processes to provide a quantitative mitigation tool. In this context it will be discussed that an estimation of leachables in a down-stream processing requires not only to consider sources of leachables but also to take sinks of leachables into account.

Examples will be given on how extractables data can be used heuristically in scaling and combination exercises. Conventional scaling methods are compared with equilibrium and/or diffusion calculations and with respect to the prediction of potential process related leachables.

The author will conclude that in future extractables experiments shall not only measure extractables as a snapshot analysis but to get access to phys.-chem. parameters relevant for the extraction system. These phys.-chem. parameters together with the knowledge of sinks of leachables will in future allow to set up mathematical models to calculate the "Fate of Leachables" in real down-stream processes.

Audience take home messages:

- Current empirical methods to extrapolate extractables data in scaling and combination exercises and in risk assessments are not sufficient
- Understanding the physical-chemical principles behind an extraction allows developing a powerful methodology for extrapolation of extractables data.
- An extension of the methodology by considering not only sources but also sinks of leachables allows the prediction of process related leachables levels and opens the possibility to establish quantitative risk mitigation concepts and mathematical modeling of entire down-stream processes

Dr. Armin Hauk Lead Scientist at Sartorius Stedim Biotech GmbH, Goettingen
armin.hauk@sartorius-stedim.com

The current state and future prospective of integrity testing of Single Use systems

Dharti Pancholi, Co-Chair, ISPE Disposable-COP, Founder, Omni Consulting, Chief Operations Officer at Advent Engineering Services, USA

The presentation will summarize the current stage of testing integrity for single use technologies including strategies and controls, as well as where the world is progressing with respect to integrity testing of such products and components.

Integrity Testing has become a topic of concern owing to the potential to impact intrinsic (and consistent) robustness of single-use systems and leading to concern contamination. The integrity control of all stages of the manufacturing process is essential aspect of a consistent GMP process. Controlling integrity of single use containers under real conditions of usage is a key prerequisite before designing the system. Thus, analyzing the risks prior to designing the test method by QbD is essential for a reliable and consistent integrity control system. Various scientific approaches and testing methods are used to test integrity of single use systems based on 2D or 3D single use systems as well as the container closure type and usage. Establishing CCIT (Container Closure Integrity Testing) strategy continues to gain attention in recent years. BioPhorum Operations Group (BPOG) and the International BioPharm are among organizations investigating on integrity control methods.

This presentation will describe

- Some of the challenges associated with ensuring robustness for disposable systems
- Overview of major integrity control methods for different type of single use systems
- Several approaches being used to build disposable systems' integrity controls
- An update on some of the future progression with respect to integrity testing

At the end of the presentation, the attendees will posses more understanding on importance of integrity testing to avoid contamination concerns and enhance robustness in the bio-pharma manufacturing process when using single use technologies. They will also be familiar with current and future methods and approaches being utilized in the industry in considerations of utilizing single use systems.

Dharti possess Masters' degree in chemical engineering with emphasis in biotechnology and ~20 years of biotech and engineering focused experience.

Dharti's early career for ~10 years includes being employed with three user side public and private companies, where she successfully led multiple biotech, vaccine and API processes from late stage R&D to clinical and commercial manufacturing.

For past ~10 years, Dharti has been involved with providing consulting services to many bio-pharma companies primarily within USA. Dharti has also provided

engineering and consulting services in Europe and Asia.

Her technical expertise spans from process engineering, process development, engineering and project management, operations, change management, process automation, quality, compliance, and CQV; and working from all project phases including capital projects.

Having led single use bioreactor (SUB) for one of her employers in 2006, MedImmune (AstraZeneca) and working on many single use technology projects afterwards, disposable technologies remains her personal interest area.

ISPE India

ISPE, the International Society for Pharmaceutical Engineering, is the world's largest not-for-profit association serving its Members by leading scientific, technical and regulatory advancement throughout the entire pharmaceutical lifecycle.

ISPE is committed to the advancement of the educational and technical efficiency of its members through forums for the exchange of ideas and practical experience.

ISPE was founded in 1980 by a handful of people who believed the pharmaceutical industry needed an organization that would deal with practical applications of science and technology for technical professionals. The much-needed forum provided by ISPE began with a Membership of engineers in North America. In time, ISPE Membership expanded beyond engineering to include a broad representation from pharmaceutical professionals.

All scientific and technical areas of the pharmaceutical manufacturing industry are represented among the ISPE Membership. Engineers, microbiologists, chemists, QA/QC, production, process development, pharmacists, regulatory and training personnel, academia, suppliers, and other professionals contribute their expertise to the industry through their participation in ISPE activities.

We lead and facilitate the development of next generation process technologies and innovative technical solutions. On matters of regulation, our focus is on those requirements that impact — or will impact — the licensing of facilities, manufacturing processes and operations, and the sustainability of the supply chain over the product lifecycle. ISPE provides a neutral environment where our individual Members and experts belonging to Regulatory Authorities can engage in open dialogue on issues that will ultimately benefit patients around the world.
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