

The Parenteral Drug Association presents:

Interest Group Meeting Pre-filled Syringes 11 April

2016 PDA Europe Conference Parenteral Packaging

Keep up with the ever advancing pharmaceutical packaging market!



SCHEDULE AT A GLANCE

11 April	10:00 - 17:00	Interest Group Meeting Pre-filled Syringes	IG Meeting
11 April	14:00 - 18:00	Molded Glass: From Manufacturing Process to Applications	Workshop
11 April	19:30 - 22:30	Welcome Party - Skybar Hilton Molino Stucky	
12 April 12 April 13 April	09:00 - 18:15 18:15 - 21:15 07:00 - 15:45	Conference Networking Event / Hilton Molino Stucky Conference	Conference, Exhibition
14 April	09:00 - 17:00	Container Closure Development	Training Course
14 April 15 April	09:00 - 18:00 09:00 - 16:30	Container Closure Integrity: Regulations, Test Methods, Application	Workshop
14 April 15 April	09:00 - 18:00 09:00 - 16:30	Extractables and Leachables	Training Course
14 April 15 April	09:00 - 18:00 09:00 - 16:30	Good Glass Handling Practices in Parenteral Packaging	Workshop
14 April 15 April	09:00 - 17:30 09:00 - 17:30	Drug Delivery Combination Products	Workshop

For latest information, please visit: europe.pda.org/ParPack2016

PDA Europe supports the children's hospice "Sonnenhof"

The Sonnenhof Hospice, located near PDA's office in Berlin, offers support and assistance to families with children suffering from incurable and/or debilitating diseases.

At Sonnenhof, children, together with their families, can spend the time they have left as they wish and find some relief from their suffering.

Instead of purchasing expensive gifts for the conference speakers, PDA has decided to donate this amount to the Sonnenhof Hospice. You can also contribute and help us increase the amount, it is easy: buy a package of chewing gums at the registration desk.

THANK YOU!

To know more about the Sonnenhof Hospice, please visit **www.bjoern-schulz-stiftung.de**



LETTER FROM THE CHAIR

Dear Colleagues,

Stay up to date regarding the latest trends in **Parenteral Packaging** by joining **PDA Europe's Conference in Venice, Italy, 12-13 April 2016!**

As proper packaging of pharmaceuticals is crucial to drug stability, this conference and the accompanying exhibition address quality of components and containers as much as aspects of processing, product distribution and storage. Excellent speakers from the industry, regulatory and academia will give detailed information about opportunities and challenges the advancing pharmaceutical packaging market faces.

The conference aims to keep its attendees updated about all regulatory aspects involved in the parenteral packaging process, such as new regulations from European and US agencies, the revision of Annex 1, and PDA Technical Reports.

We are especially proud to be featuring a whole session dedicated to the unique and surprisingly versatile packaging material glass, with the leading manufacturers sharing their latest developments.

Different materials such as polymers & elastomers and their characteristics regarding supplier issues and end-user preferences will also be discussed as well as the design of primary and secondary packaging. The role of Container Closure Integrity (CCI) in product-package development, post-approval product changes and routine manufacturing will be explored, and information on aseptic processing will be given.

Of equal importance to the content is to interact with the speakers and your fellow attendees. Hotel Molino Stucky Venice will offer a comfortable atmosphere for refreshment breaks, on-site lunches and evening receptions with plenty of opportunities for discussion and networking.

Join PDA Europe's Parenteral Packaging Conference in one of the most beautiful cities in the world!

Welcome to Venice!



J. Jude

Jörg Zürcher, Bayer, Conference Chair

Scientific Program Planning Committee

Jörg Zürcher, Bayer, Conference Chair Roger Asselta, Genesis Packaging Bettine Boltres, SCHOTT Paolo Golfetto, OMPI Renaud Janssen, Datwyler Stefan Merkle, Janssen Anna Malori, Bormioli Rocco Galen Shi, Eli Lilly Michael Spallek, rommelag Georg Roessling, PDA Europe

Interest Group Meeting Pre-filled Syringes

31 Mar 2016 Monday, 11 April 2016 10:00 - 17:00 10:00 Welcome and Introduction Georg Roessling, PDA Europe Brigitte Reutter-Härle, Vetter, IG Leader Pre-filled Syringes 10:10 News from the Interest Group Brigitte Reutter-Härle, **Highlights & Trends from Vienna, Austria** Vetter "The 2015 Universe of Pre-filled Syringes and Injection Devices" **Outlook: 2016 Universe of Pre-filled Syringes in** Huntington Beach, CA, USA 10:30 Highlights & Trends Pre-conference Workshop, Vienna, Austria William Dierick, "Innovative Combination Products" TERUMO 11:00 **Discussion and Q&A**

11:30 Lunch Break

Focus Topic: Assembly of Pre-filled Syringes into Devices

12:30	Device Assembly using Pre-filled Syringes	Markus Rothen, INSYS Industrial Systems
12:55	Best Practice in Glass Handling During Device Development and Commercialization	Thomas Schoenknecht, SHL
13:20	Assembly of Pre-filled Syringes into Devices	Bruno Reuter, SHL
	Pre-filled Syringe Silicone Treatment and Auto-Injector Performance: From Laboratory to Industrial Production	Alessandro Morandotti, <i>OMPI</i>
13:50	Silicone-oil-free COP Pre-filled Syringes integrated in 2-step Auto-Injectors: Solving Challenges of Modern Biotech Drugs and Patients' Needs	William Dierick, <i>TERUMO,</i> Orfeo Niedermann, <i>YPSOMED</i>
14:15	Discussion and Q&A	
14:45	Coffee Break	
15:10	SiOPlas Parenteral Containers: A new packaging material for sensitive biological drugs	Holger Krenz, SiO ₂ Medical
15:40	Turbid Biological Drug Product Solution - Getting The Mystery Solved	Marina Becker, <i>Roche</i>
16:05	IV Compatible Pre-filled Syringe Solutions for Fast Track Registration	Dragana Cvijanovic, Becton Dickinson
16:30	Discussion and Q&A	
17:00	Conclusion of Interest Group Meeting	



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Date & Time: 11 April 2016, 19:30–22:30

Location: Hilton Molino Stucky

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Dress Code: Casual

Admission rules: If you are not registered yet, get your ticket now. A limited number of tickets is still available on a first-come, first-served basis.



HEALTH INSIDE



HEALTH is the inestimable value to which Pharmaceutical Industry is committed. BORMIOLI ROCCO contributes to this mission with its PHARMA BU, an entity entirely and exclusively dedicated to the production of pharmaceutical packaging, driven by the same demanding requirements that guide this industry: quality, precision, safety, innovation.

Our products are developed to guarantee absolute integrity of the contained drugs, to allow them to express their full healing potential and ensure patients a secure treatment. Our packaging solutions are innovatively designed to satisfy patients' functional needs and improve the quality of their life.

We are conscious and proud to carry HEALTH INSIDE.

Workshop Moulded Glass: From Manufacturing Process to Applications

11 April from 2:00 PM to 6:00 PM Hilton Molino Stucky hotel 11 April from 7:30 PM to 10:30 PM Skyline Rooftop Bar of the Hilton Molino Stucky hotel

Cocktail Partv

Conference

12 - 13 April Bormioli Rocco, booth 21 - Hilton Molino Stucky hotel



Molded Glass: From Manufacturing Process to Applications

Mond	ay, 11 April 2016	14:00 - 18:00
14:00	Introduction and Welcome	Georg Roessling,
		PDA Europe
		Maurizio Silvestri,
		Bormioli Rocco
14:05	The Global Pharmaceutical Market:	Sarah Rickwood,
	Innovation, Specialty and Technology Shifts to 2020	IMS Health
14:35	Inhalation as Alternative Delivery Option to Increase	Francesca Buttini,
	Patient Adherence	University of Parma , King's College
		London, and RCPE
15:05	The Manufacturing Process of Glass Containers:	Corrado Ferrozzi,
	An Industry Perspective	Bormioli Rocco
15:35	Discussion and Q&A	
16:00	Coffee Break	
16:20	Regulatory Perspective on Glass Containers	Georg Roessling,
	(Based on PDA Technical Report 43)	PDA Europe
16:50	Chemical and Physical Characterization Properties of Molded Glass	Nicola Favaro,
	Containers	Stazione Sperimentale Vetro
17:30	Round Table Discussion	All Workshop Speakers
18:00	End of Workshop	



CONFERENCE AGENDA

				31 Mar 2016
Tuesda	ay, 12 April 2016			
9:00			sling, PDA Europe er, Bayer, Conference Chair	
Keynote Pr	resentations	Moderator:	Jörg Zürcher, Bayer	
9:10	Parenterals and other Delivery Options for Biopharmaceuticals		Marc Rohrschneider, Boehringer-Ingelheim	
9:40	Parenteral Delivery Enabling Packaging Solutions: An Industry Overview		Galen Shi & Ross Allen, <i>Eli Lilly</i>	
10:10	Considerations for Pre-fillable Syringes for Parenteral & Intravitre related to Particulates: The Formulation and Human Interface	al Use	Hanns-Christian Mahler, <i>Lonza</i>	
10:40	Q&A, Discussion			
11:00	Coffee Break & Exhibition			
Session 1	Regulatory Update	Moderator:	Renaud Janssen, Datwyler	r
11:30	Critical Parenteral Packaging Issues 2014 - 2015		Don Klein, <i>US FDA</i>	
12:00	Current Regulatory Challenges		Regulatory Speaker invited	
12:25	Q&A, Discussion			
12:45	Lunch Break & Exhibition			
Session 2	Materials: Glass	Moderators:	Jörg Zürcher, Bayer	
			Paolo Golfetto, OMPI	
13:45	Mechanical Modeling of Parenteral Packaging		Ronald G. Iacocca, <i>Eli Lilly</i>	
14:10	Borosilicate Glass - Putting a New Twist on a Long-Standing Tradition		Bettine Boltres, SCHOTT, Pharmaceutical Tub	bing
14:35	The New Glass Tubing Materials for Pharmaceutical Packaging		Shinsaku Nishida, <i>Nippon Electric Gla</i> ss	
15:00	Coating Technology for the Treatment of Primary Glass Containers for Parenteral Use: A Shortcut Solution to Reducing Time to Marke for Biotech Drugs		Francesco Mestriner, <i>OMPI</i>	
15:25	Coffee Break & Exhibition			
16:00	Internal Glass Surface Metallic Inclusions: A New Method for the Chemical Characterization and Quality Contr of the Container Glass Manufacturing Process	rol	Nicola Favaro, <i>Stazione Sperimentale Vetro</i>	
16:25	Innovative Glass Container Improves Filling Process Quality and Performance		Christopher Timmons, Corn Chi Liu, Janssen	ing
16:50	How to Reduce the Delamination Risk: A Converter Perspective		Daniele Zuccato, <i>OMPI</i>	
17:15	Qualifying Delamination Propensity of Glass Vials		Volker Rupertus, SCHOTT, Pharmaceutical Sys	stems
17:40	Q&A, Discussion			
18:15	End of Conference Day 1 & Networking Reception			

PDA EUROPE

is pleased to invite you to the Venetian Night Reception at the Hilton Molino Stucky.

> Date & Time: 12 April 2016, 18:15h

> Location: Hilton Molino Stucky

Dress Code: Casual

Please confirm your attendance at the PDA registration desk.

CONFERENCE AGENDA

		PARALLEL MOR	NING SESSIONS	
	Room C	Room C		
	Modern Device Devel	Modern Device Development		ng
	Moderator: Bettine Boltres, SCHOTT	Moderator: Bettine Boltres, SCHOTT Pharmaceutical Tubing		e
7:00	Modeling of Auto-Injectors	Jean-Rene Authelin, Sanofi	Changing Production Strategies: New Challenges in Sterile Filling	Matthias Poslovski Optima Pharma
7:30	Q&A, Discussion With Glass Manufacturers			anufacturers
8:00	Welcome Coffee			
		PARALLE	L TRACKS	
		Sess	ion 3	
	Track A Manufacturin	g	Track B Materials: Polymers, Elastom	ers and BFS
	Moderators: Renaud Janssen, Datwyler	; Timo Simmen , Janssen	Moderator: Michael Spallek, rommelag	
8:30	Quality and Reliability: Inline Inspection Solution for BFS Containers	Dietmar Karepin, <i>Vitronic</i>	Good Reasons to Consider Cyclo Olefin Polymers (COP) for Parenteral Packaging	Reinhard Scheller, ZEON
8:55	A Comparison of Bio-Decontami- nation using Hydrogen Peroxide Vapor with Nitrogen Dioxide Gas	David Opie, <i>Noxilizer</i>	Cyclic Olefin Copolymer (COC): An Innovative, Transparent Plastic Material for Applications in Primary Pharmaceutical Packaging	Michael Grimm, TOPAS Advanced Polymers
	In-process Testing vs 100% CCIT	Brian Vanness,	Development of an EP and USP	Martina Sandholze

Amy Plançon,

Sabic

"PDA's events always present high level, in-depth information

BFS Infusion-Bottles: Correlation

of Visual Appearance Survey Data

to Optical Measurements

Q&A, Discussion

Christoph Kaschta,

rommelag

9:45

10:10

10:30

Polyolefins and Their Influence

on Single-Use Technology for

Coffee Break & Exhibition

Bioprocessing

Q&A, Discussion

CONFERENCE AGENDA

		Ses	sion 4	
	Track A Track A Quality & Methods: CCI Moderator: Roger Asselta, Genesis Packaging M		Track B Materials: Polymers, Elastomers and E&L Moderator: Michael Spallek, rommelag	
11:00	How Tight is a Syringe - Understanding Permeation and CCI Defects in a Syringe	Derek Duncan, LIGHTHOUSE	Opportunities and Limitations in the Application of Thermoplastic Elastomers as Substitute of Conventional Thermoset Rubber	Norbert Vennemann, University of Applied Sciences
11:25	Container Closure Integrity Issues of Rubber Stoppered Plastic Vials Stored under Cryogenic Conditions	Thomas Pack, Janssen R&D	TPE vs. Rubber for Pharmaceutical Closures - Critical Comparison	Oliver Kluge, KRAIBURG TPE
11:50	Critical Process Parameters of Capping Equipment used in GMP DP Manufacturing	Roman Mathaes, <i>Lonza</i>	Visible Particles and Elastomeric Components	Renaud Janssen, Datwyler
12:15	Container Closure Integrity Testing – A Crucial Part in the Development and Qualification of Integral Packaging Systems for Injectable Drug Products	Florence Buscke, <i>SCHOTT</i> Fran de Grazio, <i>WEST</i>	The Importance of a Thorough Material Selection for BFS Applications for the Complete Packaging System: An E/L Perspective	Piet Christiaens, <i>Toxikon</i>
12:40	Q&A, Discussion		Q&A, Discussion	

13:00 Lunch Break & Exhibition

P L E N A R Y				
Session 5:	Parenteral Administration	Moderator: Galen Shi, Eli Lilly		
14:00	Preventing Errors Associated with the Preparation and Administration of IV Admixtures	Michael Spallek, rommelag		
14:25	Modelling Needle Injection Processes in Gelatin	Herbert Wachtel, Boehringer Ingelheim		
14:50	Microfluidic Structures for Disposable Devices in Parenteral Applications	Reinhard Steger, Braunform		
15:15	Q&A, Discussion			
15:45	End of Conference & Farewell			

in a professional yet friendly and comfortable atmosphere."

Friedrich Haefele, PhD, Boehringer-Ingelheim



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PDA Education Program

14 April 2016

Container Closure Development *One-Day Training Course*

14-15 April 2016

Container Closure Integrity: Regulations, Test Methods, Application Two-Day Workshop

14-15 April 2016

Extractables and Leachables *Two-Day Workshop*

14-15 April 2016

Good Glass Handling Practices in Parenteral Packaging Two-Day Workshop

14-15 April 2016

Drug Delivery Combination Products *Two-Day Workshop*

Container Closure Development

Overview

The course will give an overview on how to develop a container closure system for parenteral products. Starting with setting up of a product profile of the final product container, all aspects will be covered, like selection of materials, assessment of container closure systems, specification and documentation of components and entire systems. In addition, current hot topics such as glass delamination and container closure integrity testing will be discussed.

For all topics of the agenda presentations will be given. The participants are invited to add own experience, ask questions and offer issues to be discussed within the group and/or with the trainer. The intention is to work in an open workshop-like atmosphere.

Who Should Attend:

- Scientists in Drug Product Development
- Scientists/ Engineers in Packaging Development
- Regulatory Affairs Experts

Learning Objectives:

- Setting up of a target product profile of a container closure system
- Selecting appropriate container closure materials, components, and systems
- Applying the appropriate regulations and standards to container closure systems for parenteral formulations
- Preparing a development plan of a container closure systems from the early development until market phase
- Specifying container closure system regarding technical aspects and regulatory requirements
- Understanding compendial requirements and quality as well as technical standards regarding container closure components and systems



Jörg Zürcher, Senior Scientist, Bayer

Jörg Zürcher is a pharmacist by education. After his studies and PhD thesis at the Free University in Berlin, he started his career in the pharmaceutical industry 1990 with the former Schering AG. He is responsible for the development of container closure systems and application devices at Bayer HealthCare and has more than 25 years' experience in that field. His current focus is the development of systems/devices for liquid and parenteral as well as ophthalmic dosage forms.

Thurs	day, 14 April 2016 9:00 - 17:00
9:00	Welcome & Introduction
9:10	 Setting up a Target Profile Influence of formulation (small molecule, biological) Use of product (patient, nurse, physician) Regulatory requirement
9:30	 Material Selection Ph.Eur. / USP / JP Plastics vs. glass Coating of material Stopper material
10:30	Coffee Break
11:00	Selection of Packaging Solution
11:30	 Assessment of Packaging Solutions - Development Data Testing of injection vials/bottles and their respective components Testing of pre-filled syringes (PFS) and their respective components Extractables & Leachables (E&L) testing Mechanical and functional testing
12:30	Lunch Break
13:30	 Manufacturing of Packaging Solutions Test runs Process validation (risk assessment, critical parameters) Container closure integrity (physical vs. microbiological testing – USP 1207) Shipping test for PFS
14:00	 Setting of Specifications Technical drawings Technical / quality specification Testing standard, defect evaluation list Examples
15:00	Coffee Break
15:30	 Preparing the Submission Relevant eCTD sections (drug substance and drug product) Regulatory drawings DMF for US
16:00	 Routine and Release Testing Certificates Routine E&L testing Reduced testing
16:15	Change Management – EU requirements
16:30	Wrap-up, Discussion, Q & A
17:00	End of Training Course

Container Closure Integrity Testing

Overview

This PDA Europe Workshop focuses on theoretical and practical fundamentals of various CCI testing technologies and provides a systematic approach to applying these testing methods for CCI verification throughout drug product lifecycle. The Workshop will enable the participants to implement CCI testing strategies to ensure adequate drug product protection and be compliant with relevant regulatory and compendia requirements. In this Workshop, participants gain critical problem solving skills through:

- interactive discussions with a panel of cross-functional technical experts consisting of CCI testing laboratory experts, testing instrument suppliers/manufacturers, and pharmaceutical packaging development engineers
- hands-on testing training on the newest innovations and state-of-the-art instruments
- real-world case studies.

Learning Objectives

This PDA Europe Workshop utilizes lectures, case studies, and interactive hands-on training on testing instruments to provide insight into the latest developments of container closure integrity (CCI) Testing, with focus on achieving the following key objectives:

- Understanding regulatory and pharmacopeia requirements on CCI
- Defining CCI requirements for various container and drug product types
- Gaining fundamental understanding and hands-on experience of various CCI testing techniques: Microbial challenge ingress test; Tracer liquid leak test (dye test); Tracer gas detection (e.g. helium leak detection); Electrical conductivity and capacitance (HVLD); Vacuum decay leak detection; Laser-based gas headspace analysis; Mass extraction leak test; Various seal quality tests; Microbial immersion challenge test.
- Applying appropriate testing methods for CCI verification as a necessary component of the product life cycle
- Mastering CCI testing method development and validation approach
- Avoiding common issues and pitfalls

Who Should Attend

- Parenteral drug packaging engineers and formulation scientists
- Laboratory scientific staff and managers
- Parenteral manufacturing staff
- Sterility Quality Assurance
- Regulatory affair scientists
- Pharmaceutical packaging component manufacturing staff

Presentation of Technology, Instruments Demo and Hands-on Training kindly supported by:

ATC, Genesis, Lighthouse, PTI, Wilco, and others



Lei Li, PhD, Senior Consultant Engineer, Eli Lilly

Lei Li currently serves as a senior engineer at Delivery and Device R&D, Eli Lilly and Company. Lei has 8 years of experience in pharmaceutical and medical device industry, with focus on developing API and drug product packaging in support of clinical development and product commercialization, and establishing cold-chain distribution for biologic products. His current responsibilities include developing and applying CCI testing methods to evaluate container closure protection performance throughout drug product development, manufactur-

ing, and shipping and distribution. He is a frequent speaker at PDA conferences and author of peer-reviewed articles and book chapters on CCI test methods. Lei Li received his Ph. D. in Analytical Chemistry from West Virginia University; prior to joining Eli Lilly, he worked at GE Plastics as an analytical and material scientist.

Thursday, 14 April 2016 9:00 - 18:00

9:00 Welcome

9:30 CCI Introduction, Regulatory Requirements, and Industry Trends

- Introduction to container closure integrity
- Regulatory requirements

10:30 Coffee Break

- 11:00 CCI Introduction, Regulatory Requirements, and Industry Trends (Continued)
 - Compendia updates: USP 1207 revision updates, EP
 - PDA TR 27 revision updates

11:30 Introduction to CCI Test Methodologies

- Classification: deterministic vs probabilistic; microbiological vs physicochemical methods; by limit of detection
- Key method performance characteristics
- Laboratory bench-top testing v.s. online 100% inspection
- CCI v.s. Seal Integrity Testing

12:00 Lunch Break

16:00 Advanced CCI Testing Technologies and Seal Quality Testing Technologies

- 1. HVLD
- 2. Vacuum and pressure decay
- 3. Mass Extraction

15:30 Coffee Break

16:00 Advanced CCI Testing Technologies and Seal Quality Testing Technologies

- 4. Tracer gas (helium leak detection)
- 5. Headspace analysis
- 6. Seal Integrity methods

17:30 Day-1 Summary; Case Study Assignment

18:00 End of Day 1



Justine Young, *Associate Director, Whitehouse Laboratories*

Justine Young is an Associate Director of Container Qualification and Container Closure Integrity Testing at Whitehouse Laboratories, a division of Albany Molecular Research Inc. In her role, Justine assists clients with the qualification of their container systems as well as the identification of optimal methods for the package integrity evaluation of various parenteral product-package systems. Having previously worked intimately with Dana Morton Guazzo in efforts to optimize and validate CCIT methods, Justine has an established un-

derstanding of the development and validation process utilizing deterministic leak test technologies pursuant to USP general chapter <1207>. Justine holds a B.E. in Chemical Engineering from Stevens Institute of Technology and is pursuing her Masters of Business and Science degree from Rutgers University.

Friday, 15 April 2016 9:00 - 16:30

9:00 Day-1 Review

9:30 Development of CCI Testing Strategy

- Testing requirement definition
- Testing strategy development
- Examples and case study exercise

10:00 Approaches to CCI Testing Method Selection

- Method selection considerations
- Testing method selection guidance
- Examples and case study exercise

10:30 Coffee Break

11:00 Instrument Demo and Hands-on Training:

- 1. HVLD station
- 2. Vacuum decay
- 3. Mass Extraction

12:30 Lunch Break

13:30 Instrument Demo and Hands-on Training:

- 4. Headspace
- 5. Helium leak detection
- 6. Seal quality tests

14:30 Coffee Break

15:00 Development and Validation of Integrity Test Methods

- Method development best practices
- Method validation strategy
- Pitfalls and solutions

16:00 Course Summary

16:30 End of Workshop

Good Glass Handling Practices in Parenteral Packaging

Overview

Glass vials, syringes and cartridges are commonly used in the packaging of parenteral pharmaceuticals. Good glass handling practices are essential to assuring that the glass-based container performs as intended in maintaining the safety and efficacy of the drug product. The two-day workshop will offer insight into the science of glass and its inherent properties. It will review container design and dimensioning. It will cover glass strength and fracture mechanics. It will review the fundamental principles of good glass handling and will follow, step-by-step, the processes for packaging parenterals in vials, cartridges and syringes. Further insight into glass breakage including an overview of fracture analysis using fractography will be presented.

Who Should Attend:

- Packaging engineers
- Quality personnel
- Filling line technicians
- Supervisors and engineering support
- Those responding to failure complaints
- Root cause investigators

Learning Objectives:

- Understanding the nature of glass
- Learning what triggers glass breakage
- Knowing how to inspect glass containers for breakage-relevant defects
- Applying the knowledge to avoid glass breakage in the filling line
- In case of breakage applying a structured way of evaluating it
- Being able to read from the splinters and broken glass



Roger Asselta, Genesis Technical Advisors

Roger Asselta is Vice President of Technical Affairs at Genesis Packaging Technologies, and also a Senior Advisor at Genesis Technical Advisors, a consortium of independent consultants focusing on parenteral packaging. Mr. Asselta has over twenty-five years of experience in pharmaceutical packaging, working for firms producing glass containers, plastic containers and closures, elastomeric closures and seals, and sealing technology equipment. Roger has long been a member of PDA, serving on a number of planning committees and task forces

including those on glass defects, elastomer defects, glass handling practices and container/closure integrity. He has authored several papers and a chapter on sealing parenteral vials for the text: Practical Aseptic Processing (PDA 2008). He holds a B.S. in Biology from Maine's Nasson College and received a certificate in Quality Management from Pennsylvania State University.

Thursday, 14 April 2016 9:00 - 18:00

9:00 Welcome

- 9:15 Glass Science
 - Chemical structure
 - Physical properties

Bettine Boltres

11:00 Coffee Break

11:30 Glass Making

- Melting
- Molded containers
- **Tube drawing and container conversion** Bettine Boltres

13:00 Lunch Break

14:00 Glass Strength and Fracture Mechanics

- Trigger for glass breakage
- Crack formation and propagation
- Theory of Fractography

Bettine Boltres

15:30 Coffee Break

16:00 Container Design

- Dimensioning and tolerancing
- Variation and performance
- Review of Standards (ISO 8361)

Roger Asselta

18:00 End of Day 1

Friday, 15 April 2016 9:00 - 16:30

9:00 Visual Inspection of Glass Containers

- Inspection Techniques
- Sampling Plans
- Overview of TR-43
- Roger Asselta

11:00 Coffee Break

11:30 Good Glass Handling Practices

- Principles
- Vial processing
- Cartridge processing
- Syringe processing

Roger Asselta

12:30 Lunch Break

- 13:30 Fracture Analysis: Picking up the Pieces - Observe and Describe
 - Investigate and Document
 - Preserve the Samples

Roger Asselta, Bettine Boltres

14:30 Coffee Break

15:00 Fracture Analysis: Fractography

- Technical Review
- Practical Part

Roger Asselta, Bettine Boltres

16:30 End of Workshop



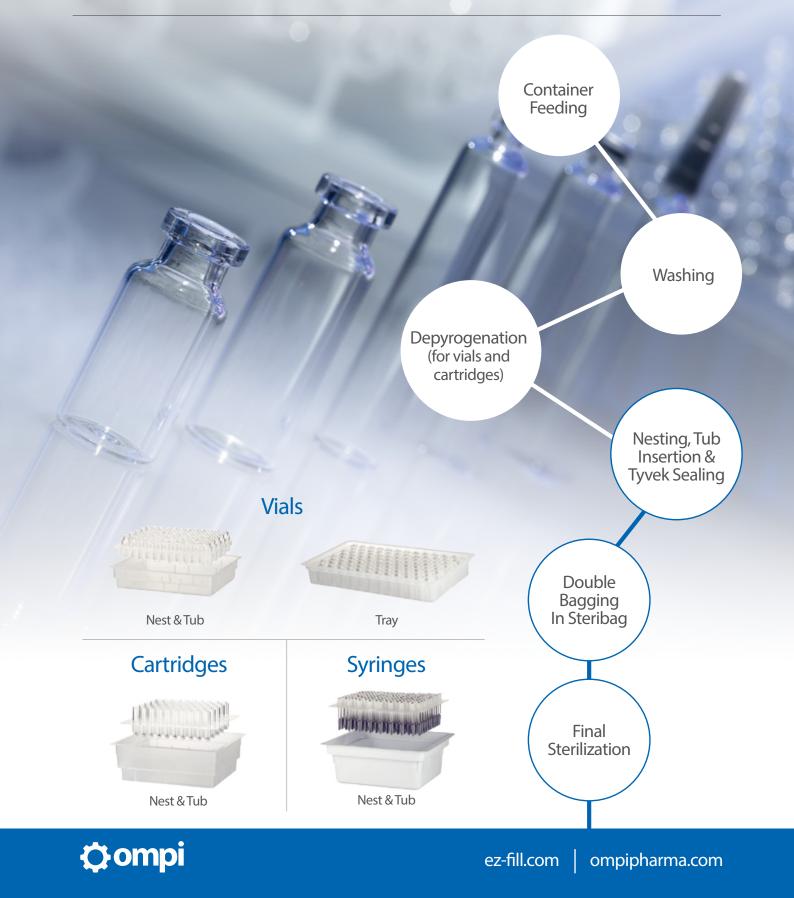
Bettine Boltres, PhD, SCHOTT AG

Since joining SCHOTT in 2010, Bettine Boltres' primary role has been in providing global scientific support and glass training for converters and pharmaceutical companies. In the past 3 years she has held over 70 glass trainings at pharmaceutical companies, converters, and universities. She is a frequent speaker at industry conferences and has chaired and moderated technical training events on glass for the PDA. A number of articles for several global magazines have also been penned by her. In the 2015 – 2020 cycle Bettine is member of the USP

Packaging, Storage and Distribution Expert Committee. Bettine is a (bio)chemist by training, receiving a diploma in chemistry from the university of Frankfurt, Germany and a PhD in biochemistry from the University of Cologne, Germany.

Compi ez-fill®

Clean, sterile glass containers ready to be filled



Thursday, 14 April 2016 9:00 - 18:00 | Friday, 15 April 2016 9:00 - 16:30

Extractables & Leachables

Including: Important Regulatory Updates – E/L Requirements for Injection Devices

Overview

When making Parenteral Drug Products, pharmaceutical companies are faced with the need to further investigate the materials that will be in contact with the drug product, either during manufacturing, intermediate storage, storage in its final packaging, or during the delivery of the drug to the patient. While historically, the potential safety issues were the main driver in these kinds of investigations, recently, also quality issues – i.e. for biopharmaceuticals – have become an additional concern.

This workshop will look at "Extractables & Leachables" from many different angles: Definitions, Regulatory, Material & Polymer Science, Analytical E/L Methodologies, Safety Assessments, Study Design for different parenteral primary packaging systems, as well as for injection devices.

In addition, during the workshop, a full session will be dedicated to an in-depth update on regulations, standards and recommendations in this field (PQRI, USP, ISO 10993, BPOG...).

Learning Objectives

Upon completion of this workshop, you will be able to:

- Explain in detail the current regulatory requirements for container / closure qualification form an E/L perspective.
- Explain the upcoming changes in regulations, standards and recommendations from PQRI, USP, ISO 10993 and BPOG and how these changes could impact a future evaluation of a pharmaceutical C/C-system.
- Understand the materials of construction and their composition of container closure systems, and how they could impact the safety and quality of a parenteral drug product.
- Put together an evaluation program (review of provided documentation, analytical testing) of different types of parenteral drug product container/closure systems.
- Perform a safety/risk assessment of analytical results, obtained after completion of an E/L study.

Faculty

Piet Christiaens, PhD, Scientific Director, Toxikon Europe John Iannone, Program Manager/Technical Specialist, Toxikon Corporation Dennis Jenke, PhD, Distinguished Scientist, Baxter Healthcare

Who Should Attend

- Pharmaceutical Packaging and Device Engineers
- Production Engineers, using SU systems
- Regulatory Affairs Officers
- Pharmaceutical R & D Managers
- Analytical Chemists, working on E/L
- Quality Assurance Officers

Thursday, 14 April 2016 9:00 - 18:00 | Friday, 15 April 2016 9:00 - 16:30

Introduction on Extractables & Leachables (E/L)

- ► What is the importance of a good E/L-qualification?
- Historical cases of leachables, impacting the quality or the safety of a drug product
- ► Regulatory requirements (FDA, EMA...) for primary packaging

Understanding the Materials, Used in the Manufacture of Pharmaceutical Containers & Closures

- ► Types of polymers examples in medical/pharmaceutical use
- ► Understanding the composition of polymers
- ► The issues with glass in parenteral applications

Analytical Techniques to Perform Extractables & Leachables Research

- ► The importance of sample preparation: the corner stone in E/L research
- ► What are the target compounds for material research
- ► How does a classification of these compounds assist in finding the right analytical technique
- ► From basic "screening" methodologies to state-of-the-art equipment

How to Set-up Extractables & Leachables Studies

- ► Selecting the right conditions for extraction
- ► How to select the right compounds to monitor in a leachable study
- ► Designing a leachable study

FULL Session on Updates of E/L- Regulations, Standards and Recommendations

- Pharma Packaging:
 - Preview of the final PQRI Parenteral Drug Product (DPD) & ODP Chemistry group
 - Update on the most recent developments on the USP <661> chapters
- Devices
 - Chemical characterization of devices according to ISO 10993-18: What changes are coming up?
 - Upcoming Revisions of the USP <87> and USP <88>: Where could it go to?
- ► (Bio)Pharmaceutical Manufacturing
 - The BPOG protocol
 - Where is USP with the update on the USP <661.3> Plastic Manufacturing Components standard

How to Perform a Safety Evaluation - Risk Assessment on Extractables & Leachables

- ► Toxicology 101
- ► EMA Guideline on Genotoxic Impurities
- ► ICH M7 (DNA reactive Impurities) and it's suggested staged approach
- ► The Threshold Concept of PQRI (OINDP and PDP/ODP)
- ► Examples



Piet Christiaens, PhD, Scientific Director, Toxikon Europe

Piet Christiaens received his Ph.D. from the Analytical Chemistry Department of the University of Leuven (Belgium) in 1991. From 1992 to 1997, he was Lab Manager in two Analytical Contract Laboratories. From 1997 to 2000, he worked as an independent consultant with Shell Chemical Company in Houston, Texas where he conducted research on a new hydrogenation catalyst system for Hydrogenated Triblock Co-Polymers (Kraton Polymers). Since 2001, Mr. Christiaens has been Scientific Director at Toxikon Europe where he develops analytical

methods and protocols for both extractables and leachables studies for the Medical and Pharmaceutical Industries. Mr. Christiaens oversees all laboratory operations at Toxikon Europe and is also supports the European business development team.

E/L Testing for a Pre-filled Syringe (Glass & Polymer)

- ► Glass Syringes: the issues with tungsten, glue residues and silicone oil and glass metals leaching
- ► The Issue with rubbers: the plunger, the needle shield or the tip cap: different approaches needed?
- ► The impact of secondary packaging option or necessity?
- ► Setting up extractables & leachables studies for a pre-filled Syringe

E/L Testing for Lyophilized Drug Products

- ► Primary packaging for the lyophilized drug product modus of interaction with the DP
- ▶ Impact of the "21CFR Part 4" on combination products, used in the administration of a lyo DP
- ► Critical aspects when designing leachable studies for lyophilized DP
- ► Integration of the administration procedure (e.g. IV-set, pump system) in leachables evaluation

How to Look at Injection Devices from an E/L Perspective

- ► Medical device regulations versus pharma packaging.
- ► Test selection process for devices: What to do?
- ► USP and ISO 10993 series for biocompatibility testing
- ► Case: Injection device

Large Volume Parenterals

- ► The challenge in E/L testing for LVP's.
- ► Primary packaging for LVP's critical materials and components
- ► Secondary packaging for LVP: critical points to consider

E/L Testing for Disposable and Single-Use Systems in Bioproduction

- ► How to classify the risk of different single-use systems in the bioproduction process?
- ▶ Understanding BPSA & BPOG recommendations, and how they can be implemented in the study design
- ► Performing E/L studies on filters: potential approaches



John lannone, Program Manager/Technical Specialist, Toxikon

John Iannone has a background in Biomedical Engineering from Boston University, where he later became a research engineer. Since joining Toxikon, John has assisted many drug & medical device companies with the development of their product safety evaluation strategies. His areas of expertise include Material Qualification/ Biocompatibity, E&L/Chemical Characterization, and attainment of either biological or toxicological risk assessments for medical devices, pharmaceutical container systems, bioprocessing systems, and combination

products. John has given numerous technical presentations and has lead several workshops on Extractable & Leachable Considerations, Biocompatiblity, Microbiology, and Regulatory Testing Requirements. John participates in the development of both industry groups' recommendations and regulatory guidelines. Additional responsibilities include providing technical assistance to clients regarding unique testing requirements in an effort for them to meet global regulatory expectations.



Dennis Jenke, PhD, Distinguished Scientist, Baxter Healthcare

Dennis Jenke is a Baxter Distinguished Scientist at Baxter Healthcare Corporation where he works with a team whose primary responsibility includes the assessment of material/product compatibility, specifically with respect to establishing the suitability for use of packaging systems, manufacturing systems and administration devices for pharmaceutical products (for example, extractables/leachables and product ingredient binding). He has published extensively in the areas of analytical chemistry, environmental science and material/solution

compatibility and serves as an expert reviewer for numerous pharmaceutical and analytical journals. He is the author of the book *Compatibility of Pharmaceutical Solutions and Contact Materials; Safety Considerations Associated with Extractables and Leachables* and a contributing author to the *Leachables and Extractables Handbook*. Dennis Jenke is a member of industry groups whose charter is to establish best demonstrated practices in the area of material/solution compatibility.

Drug Delivery Combination Products Understanding and Addressing Technical, Quality and Regulatory Challenges

Overview

The number and market value of medicinal products that require delivery by a medical device have increased exponentially over the last ten years. These products bring an increased level of complexity to the development and approval process. Also, the way these products are addressed by the regulatory agencies has changed and continues to evolve. This course will contain a combination of presentations, open discussions and hands-on exercises to enhance the knowledge and skills of the attendees.

Who Should Attend:

This course will be geared towards individuals that have input to, oversight for, or actively participate on drug delivery combination product development teams. This includes the following practitioners, managers and directors in medical device, pharmaceutical or consulting companies:

Design Verification Department

Packaging Development

Testing Laboratories

Quality Engineering

Manufacturing

Formulation

- Project Management
- Marketing
- Regulatory Affairs
- Quality Assurance
- Clinical Affairs
- Human Factors Engineering
- Device Development Engineering

Learning Objectives:

Upon completion of this workshop you will be able to:

- Explain the basic elements and requirements behind the regulation of Drug Delivery combination Products in the USA and EU
- Plan, propose and choose appropriate regulatory strategies
- Understand requirements of Design Controls (USA) /Product Realization (EU) including Risk Management, Human Factors and Clinical Requirements
- Develop a set of criteria with which to assess, choose and manage Device Partners
- Develop a set of criteria with which to verify device design, including Functional Requirements
- Identify the appropriate testing schemes and requirements specific to their products
- Learn about Post Market Requirements, including Complaints, Reportable Events, Customer Service, Change Management, and Non-conformances including Recalls



Lee H. Leichter, MBA, President, P/L Biomedical

Lee Leichter has over 35 years of experience in the health care industry. He has been providing direct, hands-on assistance to domestic and international Pharmaceutical, Biotechnology and Medical Device companies for the last 20 years. Projects have encompassed a multitude of business, technical, regulatory and quality issues, mostly relating to drug delivery and combination products for marketing in the USA, Europe and Canada. He has worked with large multi-national companies and start-ups successfully navigating the challenges posed during the development, testing and marketing approval of products that merge pharmaceutical substances with high-tech de-

vice systems. He serves as an independent expert on ISO technical committees for injection and respiratory products, infusion pumps, needles and catheters, and AAMI Injection and Infusion Devices and Human Factors committees, helping establish international standards for safety and performance of these products. Lee holds a Bachelor's degree from the State University of New York at Stony Brook and an MBA with Honors from Florida Gulf Coast University. He was certified as a Quality Engineer from ASQ and is currently certified in USA and EU Regulatory Affairs from RAPS.



Mark A. Chipperfield, MSc, Principal Consultant, Corvus Device Limited

Mark serves as an Independent Consultant to the Pharma and Medical Device industries. He has spent 20 years working within large Pharma (GSK, sanofi-aventis, Novartis, F. Hoffmann-La Roche) in the field of drug delivery devices and special purpose packaging. Through his career to date he has been heavily involved in development of medical devices for drug delivery combination products in several forms. He has performed numerous due diligence and technical evaluations of novel delivery technologies, developed products through the full design control phases to market, maintained and remediated commercial products. Mark has experienced many of

the challenges associated with delivery device development and device product maintenance within large pharmaceutical companies and implemented Medical Device development guidance, quality systems and business processes. He is an active presenter in the field and during 2013 Mark co-authored the PDA publication on 'Combination Products: Implementation of cGMP requirements'. He is currently working with RAPS to co-author the introduction for their upcoming publication; 'Global Medical Device Strategy' and with PDA to co-author a further Combination Product publication. Mark is a Mechanical Engineer by first degree and later earned his Master of Science in Engineering Management.

Thursday, 14 April 2016 9:00 - 17:30

Combination Product Basics in USA and EU

- General overview of how different types of
 - devices are defined and regulated
- Types of products and submissions
- Overview of Quality Systems and GMP
- Potential regulatory strategies
- Drug submissions -Keeping the eCTD Common – USA vs EU

11:00 Coffee Break

9:00

11:30 Product Development - Part 1

- Design controls (USA) / product realization (EU)
- Risk Management

13:00 Lunch Break

14:00 Product Development - Part 2

- Human factors
- Clinical requirements (clinical evaluations and clinical studies)

15:30 Coffee Break

16:00 Interactive Workshop

- Development of a regulatory strategy, including clinical requirements, for different types of combinations
- Each group to identify risks and hazards for specified product types

17:30 End of Day 1

Friday, 15 April 2016 9:00 - 17:30

9:00 Post Market Requirements

- Complaints
- Reportable events
- Customer service
- Change management
- Risk managements and HFE
- Non-conformances
- Recalls

11:00 Coffee Break

11:30 Partnership expectations

- Typical activities
- Types of contributors & relationships
- Design controls
- Purchasing controls
- Quality agreements

13:00 Lunch Break

14:00 Design Verification

- Physical testing vs other forms of verification
- Sample size
 - Storage and pre-conditioning
 - Instrument calibration
 - Equipment qualification
 - Statistical analysis
 - Test method validation
 - Using RM to drive DV

Functional Requirements

- Translation of URS into DIR
- ISO/other Norms
- Guidance
- Typical tests for Pre-filled Syringes, Auto-Injectors, Injection Pens, Needle Safety Systems

15:30 Coffee Break

16:00 Interactive Workshop

- Development of a plan to qualify and interact with Device CMOs
- Development of a verification plan for different devices

17:30 End of Workshop

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Contacts

For additional conference information please contact:

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Manager Programs & Events becker@pda.org

Registration & Customer Care Antje Petzholdt

Membership Management petzhold@pda.org

Education Program Inquiries Elke von Laufenberg

Manager Training & Education laufenberg@pda.org

Exhibition/Sponsorship Inquiries

Creixell Espilla-Gilart Manager Exhibition & Sponsorship espilla@pda.org

To Exhibit:

Exhibition and Sponsorship Opportunities are available. PDA meetings and conferences are a great opportunity for your company to gain on-site exposure in front of highly-qualified, upper-level professionals in the pharmaceutical and biopharmaceutical industry. Exhibit at PDA events and let your company's products or services become a valuable tool or resource for our attendees.

General Address

PDA Europe gGmbH Am Borsigturm 60 13507 Berlin, Germany Tel: +49 30 4365508-0 Fax: +49 30 4365508-66

Venue

Hilton Molino Stucky

Giudecca 810, Venice, 30133 Italy TEL: +39-041-272 3311 FAX: +39-041-272 3490 www.hilton.com/venice

Directions



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PDA Europe Conference, Exhibition, Workshops, Training Course

Your registration is only complete upon filling in and submitting both pages of this form.

Parenteral Packaging

12-13 April 2016 | Hilton Molino Stucky | Venice | Italy

Your Contact Person is Antje Petzholdt at PDA Europe **petzholdt@pda.org**

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Registration No PDA membership included	EARLY BIRD DISCOUNT Book by 12	March to receive € 150 off the confer	ence fee	e only
		All fees given in Euro, excl	uding V/	AT (22 %)
11 April	Interest Group Meeting	Meeting Fee		net
Interest Group Meeting Pre-filled	Syringes	All Participants		400
11 April	One-Day Workshop	Workshop Fee		ne
Molded Glass: From Manufacturin	g Process to Applications	All Participants		400
12-13 April	Conference only	Conference Fee		net
Parenteral Packagi	ng	PDA Member		1495
		Nonmember		1745
		Regulatory/Academic		750
14 April	One-Day Training Course	Training Course Fee		net
Container Closure Development		All Participants		695
14 -15 April	Two-Day Workshop	Workshop Fee	SOL	D OUT
Extractables and Leachables		All Participants	BOOK SEPTE	NOW FOR THE
14 -15 April	Two-Day Workshop	Workshop Fee		net
Container Closure Integrity: Regu	lations, Test Methods, Application	All Participants		1495
14 -15 April	Two-Day Workshop	Workshop Fee		net
Good Glass Handling Practices in	Parenteral Packaging	All Participants		1495
14 -15 April	Two-Day Workshop	Workshop Fee		ne
Drug Delivery Combination Produ	icts	All Participants		1495

The fee includes course documentation as well as mid-session refreshments and lunch. Excellent networking opportunities with snacks and drinks will be given.

The fee does not include the hotel accommodation. PDA Europe has secured a limited number of rooms at a special group rate.

Group Registration Discount Register 5 colleagues for the conference at the same time and receive the **5th registration free.** For more information on group discounts please contact Antje Petzholdt at petzholdt@ pda.org. Other discounts cannot be applied..

Discount for Exhibiting Companies

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PDA Europe Conference, Exhibition, Workshops, Training Course

Parenteral Packaging

12-13 April 2016 | Hilton Molino Stucky | Venice | Italy

4 WAYS TO REGISTER

ONLINE: europe.pda.org/ParPack2016
FAX: +49 30 4365508-66
EMAIL: petzholdt@pda.org
MAIL: PDA Europe, Am Borsigturm 60, 13507 Berlin, Germany

Your Contact Person is Antje Petzholdt at PDA Europe **petzholdt@pda.org**

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Please include your member ID number on registration form if available/known

If uncertain about your member ID number and/or your membership status, call or email Ms. Antje Petzholdt. +49 30 4365508-10 petzholdt@pda.org

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Please wait until we send our invoice to you.

It is helpful to reference our invoice number in your bank transfer details.

3 Complete and sign the event registration form

Please note the registration and cancellation policies at the bottom of the form.

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Registration cannot be completed by sending Purchase Order alone. A Purchase Order is only accepted if a complete registration form is enclosed or follows very soon.

5 Please state VAT ID number if European-based Company

This number starts by your country code (example: PDA Europe's VAT ID number = DE254459362)

6 Please state the correct billing address on the registration form

This is particularly important if billing address and site address are different. Contact your accounting department for correct address and company name. There could be special requirements for accounting. Changes in the billing address (if induced by participating company) will be charged 25,- € if imposed 3 weeks prior to the start of the event.

7 Confirmation of your registration

Credit card charges are confirmed immediately if successfully approved. Bank transfers are confirmed upon receipt of full payment.

8 Refund/Credit Notes

Refunds to credit card can be done immediately if payment had been done by credit card and details are available. Refunds to bank accounts can be done if payment had been done by bank transfer and the following details are provided: a) Name of your bank b) IBAN number c) Swift/BIC code

9 Substitutions

If a participant is unable to attend, substitutions are welcome at any time. Changes are free of charge until 3 weeks prior to the start of the event. After this date, there will be a charge of € 50 per name change.

10 For assistance contact: Antje Petzholdt, PDA Europe

Tel: +49 30 4365508-10

Email: petzholdt@pda.org

THANK YOU FOR YOUR COOPERATION!

2016	PDA EUROPE ACTIVITIES	&	EVENTS
11 April 11 April 12-13 April	Interest Group Meeting Pre-filled Syringes Molded Glass: From Manufacturing Process to Applications Parenteral Packaging Conference	IG TC	
14 April 14-15 April 14-15 April 14-15 April	Container Closure Development Extractables and Leachables Container Closure Integrity: Regulations, Test Methods, Application Good Glass Handling Practices in Parenteral Packaging	TC TC WS WS	Venice, Italy
14-15 April	Drug Delivery Combination Products	WS	
19-20 April	Data Integrity	WS	London, UK
25-29 April	Praxis der Pharmazeutischen Gefriertrocknung	тс	Osterode, Germany
2-3 May	Critical Demands on Modern Pharmaceutical Packaging	WS	Bern, Switzerland
9 May - 10 May	DoE Basics for Validation by Design®	тс	Berlin, Germany
31 May - 1 June	Current Challenges in Aseptic Processing, Potential Changes in EMA/PIC/S Annex 1 Revision	WS	Berlin, Germany
6 June	Viral Safety of ATMPs Conference		
7-8 June 9 June	Advanced Therapy Medicinal Products Conference Practical Application of GMP for Development of ATMPs	тс	Berlin, Germany
28-29 June	1 st PDA Europe Annual Meeting		
30 June	Test Methods for Pre-filled Syringe Systems	TC	
30 June	Cleaning and Disinfection	тс	
30 June	How to Find the Right GMP for APIs	тс	Berlin, Germany
30 June - 1 July	Root Cause Investigation	тс	
30 June - 1 July	Development of a Pre-filled Syringe	WS	
20-21 September		Ŧc	
22 September	Elastomers	TC	
22-23 September	CMC Regulatory Compliance for Biopharmaceuticals	TC	Rome, Italy
22-23 September	Extractables and Leachables	TC	
22-23 September	Introduction to Aseptic Processes Principles	TC	
22-23 September	Statistics of Production Monitoring and Capability	TC	
27-28 September 29 September	Pharmaceutical Freeze Drying Technology Conference Application of a Risk-Based Approach to Freeze-Drying Processes	тс	Strasbourg, France
29-30 September		WS	Strasbourg, France
5-6 October	Current Challenges in Aseptic Processing, Potential Changes in EMA/PIC/S Annex 1 Revision	ws	Dublin, Ireland
10 October	Interest Group Meeting Pharmaceutical Cold Chain	IG	Amsterdam,
11-12 October 13-14 October	Pharmaceutical Cold & Supply Chain Logistics Good Cold Chain Practices	WS	The Netherlands
24 October 25-26 October	Particle Identification in Parenterals Visual Inspection Forum	тс	Berlin, Germany
27-28 October	An Introduction to Visual Inspection: A Hands-on Course	тс	bertin, Germany
8-9 November	Data Integrity	WS	Berlin, Germany
14 November	Risk-based Approach for Prevention and Management of Drug Shortages	тс	
15-16 November	Outsourcing & Contract Manufacturing Conference		Barcelona, Spain
17 November	Quality by Design for Biopharmaceuticals	TC	barcetona, span
17-18 November	Root Cause Investigation	TC	
Subject to change	For latest info:		Shortlist 31 Mar 2016
neral Information	Conference Information Training Course Information Legend		interview.

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Melanie Decker Director Events & Exhibitions Tel: + 49 30 4365508-19 decker@pda.org Training Course Information Elke von Laufenberg Manager Training & Education Tel: + 49 30 4365508-21 laufenberg@pda.org

IG – Interest Group Meeting TC – Training Course WS – Workshop



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