People • Science • Regulation

PDA Letter

Volume XLIX • Issue 3 www.pda.org/pdaletter March 2013

Global Regulators Address Role of Quality in Shortages, Seek Solutions

18

2013 PDA ANNUAL MEETING **Show Issue**

Follow the logo to find articles on the *2013 PDA Annual Meeting*

Over 100 exhibitors to visit and network with!

PDA Parenteral Drug Association

2013 PDA ANNUAL MEETING

Modern Sterile Product Manufacture – Exploring Best Practices and Seeking New Approaches

April 15-17, 2013

The Peabody Orlando | Orlando, Florida

PDA's premier event, the *2013 PDA Annual Meeting* will provide outstanding educational opportunities in the areas of quality, sterile product manufacturing and biological science as well as valuable peer-to-peer networking events among many other benefits. The meeting will include sessions led by industry leaders and will give you the opportunity to share opinions and concerns about the scientific and regulatory topics being presented.

Leading the discussions:

David Cutler, PhD
Keynote Speaker
Advised the Presidential campaigns of Bill Bradley, John Kerry and Barack Obama; Senior Health Care Advisor for the Obama Presidential Campaign

Joyce Bloomfield,
Merck Sharp & Dohme

Carl June, MD, *University of Pennsylvania Abramson Cancer Center*

John S. Yu, MD
Closing Keynote Speaker
Internationally renowned neurosurgeon, Cedars-Sinai Medical Center

Following the meeting, don't miss the *2013 PDA Human Factors and Human Error Reduction Workshop* as well as six training courses hosted by PDA's Training and Research Institute (PDA TRI).

Post Conference Workshop: **2013 PDA Human Factors and Human Error Reduction Workshop**
April 17-18, 2013 | The Peabody Orlando | Orlando, Florida

Are you interested in learning more about preventing nonconformance in biopharmaceutical processing? Looking for expert guidance on human factors? Then this is the workshop for you!

www.pda.org/humanfactors2013

Keynote Speaker Just Confirmed!

Dr. Najmedin Meshkati, Professor, Sonny Astani Department of Civil and Environmental Engineering, *University of Southern California*

For more information, including an updated agenda, please visit **www.pdaannualmeeting.org**

Exhibition: April 15-16 | Career Fair: April 15-16 | Courses: April 18-19
2013 PDA Human Factors & Human Error Reduction Workshop: April 17-18

Upcoming Laboratory and Classroom Training for Pharmaceutical and Biopharmaceutical Professionals

MAY 2013

2013 PDA/FDA Container Closure Components and Systems Workshop Course
May 13 | Bethesda, Maryland
www.pda.org/containerclosurecourse

- Essential Elements of Extractables & Leachables: From Material Selection to Final Report

2013 PDA/FDA Glass Packaging Conference Course
May 17 | Bethesda, Maryland
www.pda.org/glasscourse2013

- Identification and Classification of Nonconformities in Ampoules, Syringes and Injection Devices for Pharmaceutical Manufacturers

2013 PDA/FDA Process Validation Workshop Course Series
May 22-23 | Bethesda, Maryland
www.pda.org/provalcourses2013

- Utilization of Statistical Methods for Production Monitoring (May 22)
- Process Validation and Verification: A Lifecycle Approach (May 22-23)

JUNE 2013

2013 Aseptic Processing Training Program
Bethesda, Maryland
www.pda.org/2013aseptic

- Session 3: June 3-7 and June 24-28, 2013
- Session 4: August 26-30 and September 23-27, 2013
- Session 5: October 14-18 and November 4-8, 2013

2013 PDA/FDA Pharmaceutical Supply Chain Workshop Course Series
June 6 | Bethesda, Maryland
www.pda.org/supplychaincourses2013

- Risk Management for Temperature Controlled Distribution – New Course
- Active Temperature Control Systems: Qualification Guidance – New Course

2013 PDA Aseptic Processing-Sterilization Conference Course Series
June 18-19 | Chicago, Illinois
www.pda.org/asepticsterilizationcourses

- Validation of Moist Heat Sterilization Processes: Cycle Design, Development, Validation and Ongoing Control (June 18)
- Parametric Release of Pharmaceutical and Medical Device Products Sterilized with Moist Heat (June 19)
- Validation of Dry Heat Processes (June 19)

For more information on these and other upcoming PDA TRI courses, please visit www.pda.org/courses

Laboratory Courses

The PDA Training and Research Institute is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmacy education.

PDA Letter

Volume XLIX • Issue 3 www.pda.org/pdaletter

Cover

Cover Art Illustrated by Katja Yount

Departments

News & Notes

People

Science

Regulation

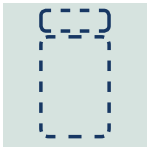
Programs & Meetings

TRI — Education

Voices of PDA

Contents

Features



Denyse Baker Joins PDA as Sr. Regulatory Advisor

PDA is pleased that **Denyse Baker** joined PDA staff as Sr. Regulatory Advisor in February 2013. Denyse spent the previous two years at the U.S. FDA where she was a Quality Implementation Lead in the Office of New Drug Quality Assessment (ONDQA), CDER. Prior to this, she spent 22 years at Eli Lilly, starting as a pharmaceutical engineer in 1987. During her time at Lilly, she gained experience in regulatory affairs by preparing regulatory strategies, working with FDA on CMC regulations, negotiating consent decrees and devising global registrations. She also spent two years in Fegersheim, France as the design engineer for a new aseptic filling facility.

While at FDA, she developed and implemented quality management systems, including foundational policies, procedures, training and records management. She also served as facilitator for ONDQA's 2011 Quality by Design Discussion Group. She also led numerous workshops and seminars on regulatory topics pertinent to industry.

Denyse has a BS in Mechanical Engineering from Northwestern University and a professional engineer's license. She is RAC-certified in both the United States and the European Union.

As Senior Regulatory Advisor, Denyse will support PDA's regulatory affairs and external operations for both the United States and Europe.

PDA welcomes Denyse to the team!

Elizabeth Junker Joins PDA Journal Editorial Team

Elizabeth Junker, PhD, joined the editorial team of the *PDA Journal of Pharmaceutical Science and Technology* as an Associate Editor. She has 24 years of experience in the pharmaceutical industry in process development for natural products, antibodies, therapeutic proteins and vaccines. She currently works in the BioProcess Development group of Merck Research Laboratories, where she is responsible for Quality by Design (QbD), knowledge management, operational excellence and providing scientific advice to various project teams in the bioprocess area. She recently led the design of the bioprocess QbD strategy within the company. Previously, she was responsible for non-GMP laboratory and pilot scale bioprocess operation areas and rapid production of reagent proteins. She received a BS in Chemical Engineering from Princeton University and a PhD in Chemical Engineering from the Massachusetts Institute of Technology.

PDA welcomes Elizabeth to the *PDA Journal of Pharmaceutical Science and Technology* team!

Members Raise Nearly 15K for Sandy Victims

PDA extends a special thanks to all the members who donated to the Hurricane Sandy Relief Fund that went to the American Red Cross. We collected a total of **$14,758** to help the families and members who were affected.

PDA Volunteer Spotlight

Mauro Giusti, PhD

- Director, Technical Services and Manufacturing Sciences
- *Eli Lilly*
- Member Since | 2003
- Current City | Florence, Italy
- Originally From | Florence, Italy

If he could, Mauro would trade places with Jacques Cousteau.

It is very rewarding to recruit young professionals and focus on their development, both in technical and managerial skills.

What three music albums would you like to have on a desert island?

"Breakfast in America" by Supertramp, "The Dark Side of the Moon" by Pink Floyd and "ABBA Gold: Greatest Hits" by ABBA

If you could trade places with any other person for a week, famous or not famous, living or dead, real or fictional, who would it be?

I would like to trade places with someone like Jacques Cousteau, and have the chance to visit and scuba dive in oceans across the world.

What magazines, books or newsletters do you read on a regular basis?

I read PDA's periodic publications in addition to *Pharmaceutical Technology* and *BioPharm International.* I also like books on management skills and on motivation and engagement, as at the end of the day, there is no success or progress without engaging people.

What is something you learned/gained from PDA that you couldn't have gotten anywhere else?

PDA is my top choice organization for technical matters related to the science of making medicine. Some of the technical reports are truly the state of the art on given topics.

I understand you were very involved with the Italian chapter, specifically the chapter board. What would you tell a new member about the time expectations and value of this type of volunteer work with the Italian chapter?

It is a very nice experience as chapter members are both people working in companies making products or services for pharma industry, as well as people working in national or multinational pharma companies. Phone calls and meetings are opportunities to share information and to learn from each other. Connecting people is truly the spirit of PDA. The time expectations are not much, meaning something like 2-4% of my total time, but it is definitely worth it.

To volunteer with PDA, visit www.pda.org/member-volunteer

PDA Taking the Initiative in India

Richard M. Johnson, PDA President

Last May, **Maik Jornitz** (Immediate Past Chair, PDA) and I travelled to India for a series of meetings to gather information about the level of interest in PDA establishing a new chapter. Through the excellent support of Sartorius-Stedim India, we had several meetings in cities throughout India.

We began our visit with a call on the Drug Controller General, **G.N. Singh,** PhD, in Delhi on May 14, 2012. He welcomed us to his office, and expressed support for improving the technical knowledge of both the Indian regulators and the industry.

We then traveled to Bangalore where we visited the office of Biocon, one of the largest biopharmaceutical companies in India, and discussed with senior representatives the developments in the industry and the possible activities of PDA. That afternoon we held a technical symposium that covered several topics, including "An Overview of PDA," "Single-Use Systems" and "Sterile Filtration." The event was attended by more than 45 people.

Attendees at the Hyderabad meeting listen with rapt attention

Our next visit was to Hyderabad, where we visited Dr. Reddy's Laboratories, the largest Indian pharmaceutical company, and held another technical seminar, attended by more than 100 people. Again, the response was very positive and we made many contacts with pharma industry members. The response in Hyderabad was so large that we had to double the arrangements at the last moment.

Our last stop in India was in Mumbai, the largest city in the country and the economic center. We made a visit to Cipla, a large Indian company, and repeated the technical seminar with more than 40 attendees. We were also interviewed by a local trade journal, *Process International*, which ran the article in their next issue.

Many thanks are due to **Amit Sharma** and **Krishna Chandran** of Sartorius Stedim India and their team for the excellent support in making arrangements for this successful visit.

Based on this great response, we began working with volunteer PDA members in India who were passionate about the idea of establishing a new chapter. Through a series of meetings, we developed a plan which included an initial team of chapter leaders, and worked through the logistics of establishing non-profit status in India. I am pleased to report that this effort has successfully concluded, and the PDA India Chapter has now joined the network of PDA chapters around the globe.

The initial chapter leadership will include PDA members and industry leaders: **Sanjay Singh** of Aurobindo Pharma, who will serve as the first India Chapter President. He will be joined by Chapter President-Elect **Sanjit Singh Lamba,** Eisai Pharmatechnology & Manufacturing; Chapter Treasurer **Ivy Louis,** Vienni Training & Consulting; and Chapter Secretary **Amit Sharma**, Sartorius India. The Chapter also finds active support of some long standing members of PDA from India as founding members of the Chapter.

PDA PIC/S Training: GMP for APIs | October 29-30 | Beijing, China

PIC/S Instructors

(back l–r) Mikael Le Bihan (GMP inspector ANSM), Dr. Ian Stewart (GMP Inspector, MHRA), Steven Brown, PhD (Vivalis), Kang Teng Ong (Inspector from Singapore), Georg Rössling PhD (Sr. VP PDA Europe)

(front l–r) Lai Weng Fai (Inspector from Singapore), "Cindy" Huang (Inspector from Taiwan), "Mina" Min Lo (Inspector from Taiwan)

Sessions were filled with attendees eager to learn the latest in worldwide GMPs.

Georg Roessling, PhD, PDA Europe, answers questions during an interview.

Is Your Wiper A
Hand Me Down?

Buy Vertex® Sterile Wipers.

Manufactured HandsFree™ for the lowest possible risk.

Cleanroom wipers look white but are they really clean?

Cleanroom wipers are made by hand, but people are the greatest source of contamination. A standard wiper adds great risk through introduction of dirt, particles and other unwanted intruders into your cleanroom.

Sterile Vertex, The Ultra-Clean Wiper.

Texwipe developed a patent-pending, fully-automated system to wash, cut and pack wipers without human hands. The robotic technology guides each wiper through its production and ensures consistency from wiper to wiper, bag to bag and lot to lot.

Available for purchase online at www.texwipe.com

Scan the QR Code for more information or contact us at one of the numbers below.

MADE IN U.S.A.

Texwipe® An ITW Company

North America Office (800) 839-9473 | **Europe/Middle East Office** +31.88.1307.410 | **Asia/Pacific Office** +65 6468 9433 | **www.texwipe.com**

2013 PDA ANNUAL MEETING

Join in the Fun with Fellow PDA Members at Annual

PDA has arranged for some exciting and fun events for our members at the upcoming *2013 PDA Annual Meeting* in Orlando, Fla. We urge members to come and attend these events which also offer opportunities for mingling and networking. Come join us and enjoy unforgettable memories!

April 14

7th Annual PDA Golf Tournament

On Sunday, show off your swing at the 7th Annual PDA Golf Tournament, held between 7:30 a.m. and noon at the Shingle Creek Golf Course. This award-winning course allows you to customize your game with five sets of tees. Spend your morning on the greens networking with co-workers, colleagues and friends. $155.00 per person; price includes cart, green fees, practice and range balls, refreshments and lunch.

PDA 7th Annual Walk/Run

Be a hero to children with cancer and join us at PDA's 7th Annual Walk/Run to benefit the BASE Camp Children's Cancer Foundation! The event will be at the Peabody Hotel in Orlando, Fla. This year the funds will help benefit and impact the lives of the patients and their families. The cost is $30 per registered attendee or guest; price includes transportation, a pedometer, t-shirt, race bib, snacks and beverages. For more information and to register visit, www.pdaannualmeeting.org or email **Melissa Pazornik** at pazornik@pda.org.

April 15

Meet and Greet Reception

Once you've registered, we invite you to mingle with other attendees at a reception between 3 p.m. and 6 p.m. Relax and chat with old friends as well as introduce yourself to some new folks. Sit back, enjoy some refreshments and let everyone know how your flight went.

Networking Gala Reception

After a long day full of informative presentations delivered by expert speakers, join fellow members in the Exhibit Hall at 6 p.m. for an hour and a half of networking while you enjoy some refreshments.

April 16

Passport Raffle Drawing

For those who get their passport stamped, come to the Exhibit Hall at 3:15 p.m. and see if you're a winner! Prizes will only be given to those present at the drawing.

PDA Dine Around

At this optional event, dine with colleagues from a selection of restaurants, including Fleming Prime Steakhouse, Ruth's Chris Steakhouse, Rocco's Tacos, Vito's Chop House and Boston Lobster Feast. Transportation will be provided and will depart promptly at 6:15 p.m. from the Mallard Tower Entrance of the hotel. Interested participants can register at the PDA Registration Desk on April 15 and 16.

Additionally, there will be further opportunities for networking during daily luncheons held in the Exhibit Hall. Refreshment breaks will provide further opportunities for mingling as well as opportunities to chat with exhibitors.

Members also have the opportunity to receive discounted tickets for Disney World and Universal Studios for themselves and their families. For more information, go to www.mydisneymeetings.com/pda2013 and www.universalorlando.com/convention.

Pharma&Biotech

Lonza

We've Been There

QC Tests from People Who Use Them

We've walked in your shoes and know the challenges you face in a regulated, manufacturing environment. As a manufacturer ourselves, we face them too. Our decades of experience are part of every QC Testing product and service we offer. We know your business depends on the quality and reliability of your testing products – that's why we build them that way.

Our portfolio includes:

- Endotoxin Detection products, services and industry-leading software
- Rapid mycoplasma detection products and testing services

QC Testing Solutions – transforming practical knowledge into action.

www.lonza.com/qc

snapshot 2013 PDA ANNUAL MEETING

Single-Use Systems TR Coming Soon; Preview the Topic at Annual Meeting

Josh Eaton, PDA

Following two successful single-use systems workshops in 2011 and 2012, the Single-Use Systems Technical Report Team is on track to publish a new PDA technical report in 2013. Incorporating valuable insights and discussions from the workshops, the report will present critical concepts and considerations for implementing a single-use system strategy in a pharmaceutical manufacturing process. Additionally, there will be sessions on single-use technology at the upcoming *2013 PDA Annual Meeting*.

The current manufacturing environment places a premium on greater flexibility, facility utilization and reduced capital and operating costs. Integrating single-use device technology into a production process may help companies realize gains in those areas. Single-use technology is in a period of rapid change, however, and determining the optimal manufacturing strategy involves concepts from many disciplines. An effective evaluation will require balancing the risks and rewards of a single-use system (SUS) over a multiple-use system, while accounting for engineering, regulatory, quality, project management and accounting aspects. To fully represent those disciplines, the technical report team includes experts from U.S. and European industry, as well as the U.S. FDA.

This technical report will discuss single-use systems that are in direct or indirect contact with the raw materials, intermediates, intermediate products, pharmaceutical drug substances or drug products. It will not discuss single-use disposable items related to laboratory activities, final delivery system to the patient, transfusion bags, packaging or pharmaceutical medical devices.

Continued at top of page 16

Annual Meeting *Preview*

Interest Group, Task Force and Advisory Board Meeting Schedule

The business of the Association will be conducted, as always, at the *2013 PDA Annual Meeting*. **Note:** All interest group meetings are open to meeting registrants; task force, advisory board and other committee meetings are by invitation only. (For Regulatory Affairs ancillary meetings, see the Regulatory Snapshot, p. 34)

Sunday, April 14

5:00 p.m. – 6:00 p.m.

Interest Group Leaders Meeting

Monday, April 15

7:00 a.m. – 8:30 a.m.

PCMO℠ Steering Committee

12:45 p.m. – 1:45 p.m.

Science Advisory Board (Invitation Only)

4:30 p.m. – 6:00 p.m.

Biotechnology Interest Group

Facilities and Engineering Interest Group

Sterile Processing Interest Group

Prefilled Syringes Interest Group

Microbiology/Environmental Monitoring Interest Group

Tuesday, April 16

4:00 p.m. – 5:30 p.m.

Lyophilization Interest Group

Vaccines Interest Group

Process Validation Interest Group

Visual Inspections of Parenterals Interest Group

Packaging Science Interest Group

Filtration Interest Group

5:30 p.m. – 8:00 p.m.

Biotechnology Advisory Board (Invitation Only)

Wednesday, April 17

12:30 p.m. – 5:00 p.m.

Prefilled Syringes Task Force Meeting (Invitation Only)

Blow Fill Seal Task Force Meeting (Invitation Only)

Thursday, April 18

9:00 a.m. – 4:30 p.m.

Prefilled Syringes Task Force Meeting (Invitation Only)

Blow Fill Seal Task Force Meeting (Invitation Only)

Task Force *Corner*

Objectionable Microorganisms TF to Release Survey

Jahanvi (Janie) Miller, PDA and Rebecca Stauffer, PDA

The lack of a standard decision-making principle for objectionable microorganisms is a major issue for multinational companies with global operations and interconnected supply chains. Although U.S. regulations require written procedures to prevent objectionable microorganisms in nonsterile drug products, as well as laboratory testing of drug products, the term "objectionable microorganisms" is not well-defined, and there is no real consensus as to the organisms that specifically need to be excluded from each dosage form.

This is the primary driver behind PDA's planned technical report, *The Exclusion of Objectionable Microorganisms from Pharmaceutical and OTC Drugs*. The authoring task force is chaired by **Anthony Cundell,** PhD, Sr. Principal Scientist, Analytical Sciences – Microbiology Pharmaceutical Sciences and Clinical Supply, Merck, and **Anil Sawant,** PhD, VP, Compliance, J&J. The task force hopes to provide the technical and scientific framework for mitigating the risk of objectionable microorganisms in their nonsterile drug products.

To assist in the development of this report, the task force has created an *Objectionable Microorganism Survey* for selected companies common to the PDA membership and outside the membership, such as monograph drug manufacturers, OTC manufacturers, contract manufacturing organizations, contract laboratories and overseas manufacturers. The goal is to conduct the survey in first quarter of 2013. The purpose of the survey will be to determine how the pharmaceutical and personal care industries evaluate the presence of a nonspecified microorganism as an objectionable microorganism that had been obtained from the microbial analysis of a nonsterile finished product formulation. The depth of the survey questions range from the microbial analysis of nonsterile finished product formulations to what factors are being used to conduct a risk analysis of the recovered microbial isolate as an objectionable microorganism.

The survey and the resulting technical report are being designed to clarify appropriate methods for identifying and handling microorganisms in pharmaceutical products that might pose a threat to consumers. Additionally, the task force hopes to define the definition of objectionable microorganisms.

The PDA task force has made great progress since being formed in 2012. The co-chairs actively recruited microbiologists, regulators, academics and infectious disease specialists to serve on the task force. Six teams focused on benchmarking, dosage forms, manufacturing processes, laboratory testing, clinical aspects and risk assessment were formed and a team leader was appointed for each team. The teams have been meeting every two weeks since September 2012.

Tech *Trends*

Companies Expanding LMS to Include Content

Rebecca Stauffer, PDA

Learning management systems (LMS) are now as ubiquitous across the industry, in both small and large companies, as rapid microbial methods technology. By now, industry trainers generally recognize the capabilities LMS offers for training record-keeping and planning, especially within an industry reliant on staff meeting certain levels of documented SOP compliance. Now, companies are moving to expanding their LMS into learning *content* management systems (LCMS). By transforming a LMS into a LCMS, the platform becomes more than just a record-keeping checklist; it becomes a central repository of training materials; including PowerPoint slides, training handouts and other "learning objects."

Previously, most companies were focused on the "track and report" aspects of LMS, utilizing the system to ensure that employees were trained on specific GMPs and maintain compliance. As the systems have evolved, companies realize that having real-time access to learning materials enables trainers to localize content for various regions, regulatory jurisdictions and roles without sacrificing consistency.

But how widespread is the adoption of LCMS platforms across the industry?

"Learning content management systems are something that are definitely more likely to be found in Big Pharma," said **Joyce Winters,** Owner, J Winters Consulting. "Smaller firms are less likely to use them."

She went on to state that some of her clients, mostly smaller firms, rely on paper records. Still, LCMS offers benefits for companies of all sizes.

Timothy Gillum, PhD, Senior Manager of Training, Baxter Healthcare Corporation, agrees that the benefits of a LCMS outweigh those of a LMS that lacks content capabilities.

"The LCMS' provide a much better total experience for staff," he said. "It combines the traditional training assignment and completion documentation with the ability to move away from read and forget methodologies to a more learner-centric approach to meeting requirements for today."

Continued at bottom of page 17

Single-Use Systems TR Coming Soon; Preview the Topic at Annual Meeting continued from page 14

Following an introductory overview of SUS implementation, the technical report will be divided into four main areas to provide in-depth investigation and methodology of the process detailing technologies and system integration, business drivers, qualification of assembled products and implementation.

In brief, the technologies section will provide comparisons of a single-use manufacturing strategy to a multi-use system approach and provides a guide for assessing the feasibility and risks associated with implementing a single-use system. The business drivers discussion will include examples of how a SUS allows for more flexible operations with faster changeover times and more lean operation capability.

The last section, with a focus on implementation, follows the natural progression of workflow seen during the implementation process including manufacturing strategy, risk and stakeholder management and process validation.

The upcoming technical report presents a structured science- and risk-based approach, including knowledge gained from past workshops, to determine the proper SUS implementation plan for an individual company's circumstances. In drafting the technical report, the team has remained focused on the primary goals of developing any manufacturing strategy: patient safety, product availability, product understanding and process understanding.

In keeping with PDA's goal of delivering valuable information to the pharmaceutical community as a whole, these concepts will be presented in a manner applicable to both chemically synthesized small molecules and bioprocesses that produce large-molecule biopharmaceutical products.

To preview the topic of the technical report, there will be some sessions on single-use systems at the *2013 PDA Annual Meeting*. On April 15 the session, "Current Trends in Process Validation," will include a presentation on the validation of single-use systems provided by **Christopher Smalley,** PhD, Director, Merck Sharp & Dohme. The following day, **Robert Repetto,** Senior Director, Pfizer, will discuss how to implement a single-use systems strategy in one of the afternoon concurrent sessions. Then, on Wednesday, April 17, **Maik Jornitz,** Vice President of Business Development, G-Con, will moderate "Advances in Single-use Technology Applications" with presentations from **Dave Cousins,** Director, Bosch, and **Govind Rao,** PhD, Director, Center for Advanced Sensor Technology, University of Maryland Baltimore County. Please visit pdaannualmeeting.org to learn more about these sessions.

Tech Trends continued from page 15

Gillum identified the two major challenges companies are facing as they implement content-driven learning platforms: concerns about the ability of the system to meet 21 CFR Part 11 and privacy requirements, and the cost and organizational changes required for the transition from previous learning tools.

"The Part 11 and data privacy concerns of some of the LCMS' are valid, while others are simply a concern," he said. "Questions of how each LCMS vendor hosts the system (i.e., private cloud, public cloud, etc.) challenge many of the conservative lifecycle policies within our industry and Works Council requirements from our European locations. Additional concerns include the completeness and transparency of audit trails and security structures."

To deal with these concerns, firms are ensuring that employees working closely with the system are thoroughly trained on it as well as how to interpret the data.

Firms are also making sure those involved are aware of regulations on reporting and sharing of data, Gillum said.

If your company is looking to implement a LCMS, there are a multitude of options, according to Winters.

"Most of your bigger name companies' software programs have learning content management as well as detailed training record systems. So, ComplianceWire, Aspen or SAP systems, are going to have content management as well as training record management," she said citing familiar names.

Gillum shared this assessment.

"As learning technologies have evolved, our industry has invested in several components that supplement the traditional LMS used to assign, track and report training," he said. "These tools include authoring tools, assessment tools, advanced reporting and dash boarding tools and content management tools. In essence, our industry is leveraging a 'Franken-LMS' structure to meet our maturing training landscape."

Despite a few challenges, experts now believe that we are moving beyond the "early-adopter" phase and expect more firms to migrate to LCMS capabilities ***(1).*** Pretty soon LCMS platforms will be as common across pharmaceutical manufacturing as rapid microbial methods!

References

1. CHECK.point eLearning, "Insight into Learning Content Management Systems," September 2007 www.checkpoint-elearning.com/article/4465.html.

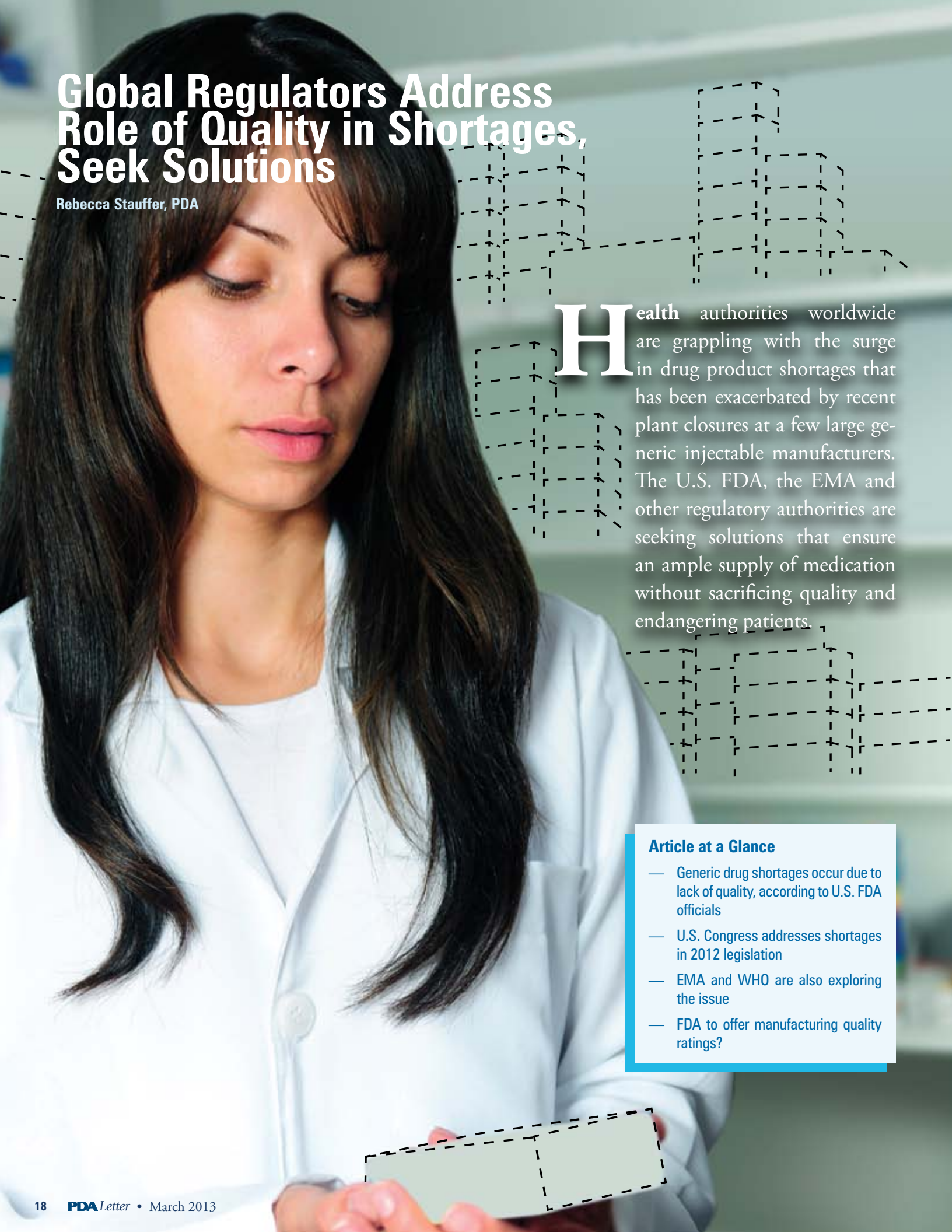
About the Experts

Timothy Gillum, PhD, has worked both in academic and business environments for more than 15 years focusing on learning and change management within regulated environments. In his current role at Baxter, Tim is responsible for the Global Quality Training Process/System.

Joyce Winters is the owner of J Winters Consulting and provides consulting services on the topic of training for pharmaceutical firms. She has a degree in Biology from The College of William and Mary.

Global Regulators Address Role of Quality in Shortages, Seek Solutions

Rebecca Stauffer, PDA



Health authorities worldwide are grappling with the surge in drug product shortages that has been exacerbated by recent plant closures at a few large generic injectable manufacturers. The U.S. FDA, the EMA and other regulatory authorities are seeking solutions that ensure an ample supply of medication without sacrificing quality and endangering patients.

Article at a Glance

- Generic drug shortages occur due to lack of quality, according to U.S. FDA officials
- U.S. Congress addresses shortages in 2012 legislation
- EMA and WHO are also exploring the issue
- FDA to offer manufacturing quality ratings?

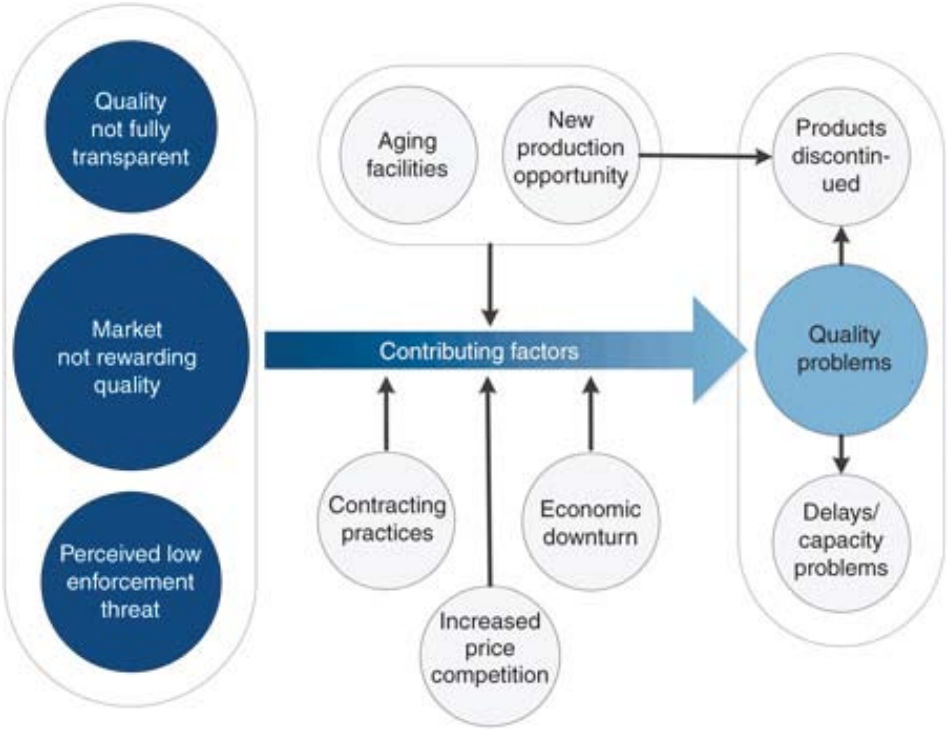
In January, **Janet Woodcock,** MD, Director, CDER, FDA, and **Marta Wosinska,** PhD, Director, Economics Staff, CDER, FDA, commented on the link between manufacturing quality and shortages, notably for generic sterile injectable drugs. They wrote, "Drug shortages are first and foremost driven by the inability of various firms to maintain production because of the failure of quality management in facilities that produce the finished dosage form of the drug (rather than the active ingredient)" ***(1).***

In fact, the relationship between quality and a shortage may not necessarily be readily apparent. Woodcock and Wosinka's article mentioned that when a shortage occurs due to product discontinuation, an underlying reason might be capacity constraints brought about by quality-related issues, i.e., firms discontinue a medication because it is easier and cheaper than upgrading or troubleshooting the production process, facility or equipment. The pair also highlighted aging facilities, lack of oversight of manufacturing contractors and the recession as additional factors causing shortages. The figure below, taken from their article, shows the economic reasons for generic injectable quality problems.

But why generics? Woodcock and Wosinska explained that since manufacturers of generic drugs compete on price, smaller profit margins mean companies are less willing or able to invest in quality systems. Further complicating matters is the marketplace, which rewards low cost rather than high quality. Practitioners, healthcare providers (insurers, etc.) and consumers do not purchase generic pharmaceuticals based on quality; rather, they make decisions almost entirely on cost. Manufacturers of generic injectables have little incentive to invest in quality, since doing so would raise the cost of their product—which is an untenable business proposition for a variety of economic reasons cited by the authors.

In 2011, the U.S. House of Representatives held hearings to learn about drug shortages and issued a report in June 2012 which blamed FDA's "stepped up enforcement" as the primary reason for the spate of generic injectable shortages. The report outlined FDA-initiated shutdowns of facilities owned by the four largest producers of generic injectable drugs—Ben Venue Laboratories, Hospira Inc, Sandoz Pharmaceuticals and Teva Pharmaceuticals ***(2).***

The economic drivers of generic injectable drug shortages per Woodcock and Wosinska



The Agency defended its actions in a letter to the committee ***(3)***. FDA made it clear that regulatory action followed voluntary recalls in three of the four cases discussed in the report. The serious product defects included contamination (endotoxin, mold or particles) and, in the case of morphine, overfilled units. In each of the four cases, FDA noted, the firms made the decision to suspend operations voluntarily to fix the manufacturing/quality problems.

The letter went on to reiterate the Agency's dedication to its mission of ensuring patient access to safe and effective drugs and then outlined in specific detail the manufacturing issues that occurred at the four companies' plants that necessitated shutting down operations. Early this year, Ben Venue entered into a voluntary consent decree with the Agency.

In essence, the Agency walks a fine line between ensuring ample supply of essential medications while also ensuring the safety of the user. The results of allowing public access to a compromised product can be deadly, particularly with sterile products. To understand the importance of high-quality injectable products, one need only look at the recent case of contaminated steroid injections manufactured by the New England Compounding Center that directly resulted in patients infected with fungal meningitis. While the problems at the compounding company are different than those at the manufacturers, the fact is, compromised product can harm patients no matter what kind of company supplies it.

FDASIA Targets Shortages

Around the same time the FDA sent the letter to the committee, Congress passed the Food and Drug Administration Safety and Innovation Act (FDASIA) of 2012 which, among many provisions, contained specific language to address shortages.

The Act requires FDA to:

- Submit an annual report to Congress on drug shortages, including efforts to address the shortages

- Set up a task force to develop and implement a strategic plan to enhance the Agency's response to the issue (plan must be submitted to Congress within one year following the enactment of FDASIA)
- Maintain a public list of drugs currently in shortage along with a reason for the shortage and an estimated duration
- Evaluate if an enforcement action could result in a shortage and analyze the risks and benefits to patients from the shortage and enforcement action
- Expedite review of applications and inspections that could mitigate a shortage
- Develop a mechanism to allow healthcare providers to report evidence of possible shortages.

In addition, the Act calls for a U.S. Government Accountability Office report examining drug shortage causes as well as recommendations to prevent or alleviate shortages.

The law also has provisions for industry. These include:

- Broader criteria for early notification of potential product discontinuations, whether temporary or permanent
- Requirement for the reporting of shortages of biologics, previously exempt from reporting requirements
- Shortages of drugs used for emergency medical care or surgery must be reported to the FDA

Manufacturers failing to comply with these notification requirements will receive a noncompliance letter from the Agency.

EMA, WHO Also Exploring Drug Shortage Solutions

FDA and the U.S. Congress were not alone in combating drug shortages in 2012. In November, EMA published a paper analyzing recent drug shortages in the European Union and proposing short-term solutions for the European Union's network of regulatory bodies. Like FDA, EMA has been tackling the issue of shortages for several years. In fact, following compliance issues at Ben Venue, EMA allowed for the importation of medically necessary medicines manufactured by the company in the European Union with restrictions. The EMA report cited ripples in the global supply chain as a leading cause of shortages in Europe ***(4).*** European manufacturing operations are highly globalized and therefore susceptible to disruptions, as shown by the 2011 Japanese tsunami's effect on pharmaceutical availability.

Actions to address shortages in the EU include:

- Establishing internal catalogs of centrally authorized products and noncentrally authorized products that have experienced shortages for analysis
- Developing a harmonized approach to determine what constitutes an "essential" medicine and prioritizing accordingly
- Promoting international cooperation and communication on shortages
- Requiring companies to submit risk analyses of manufacturing processes that identify weaknesses and list contingency plans for these weaknesses ➤

sartorius stedim biotech

Biomanufacturing “out of the box“

FlexMoSys™ – flexible, modular and fully integrated solutions

Sartorius Stedim Biotech’s well-established, single-use and reusable product portfolio and G-Con Manufacturing’s novel, modular, mobile cleanroom “pods” provide an unparalleled set of cost-effective, “plug and play” tools for next-generation biomanufacturing:

- Lower cost of growth and on-demand scalability
- Requires only a “gray space” and enables fast-track construction
- Pods arrive fully commissioned with a compliant engineering turnover package
- Ideal for multiple technologies and products
- Integrated with Sartorius configurable single-use systems
- Standardized hardware equipped with flexible, pre-sterilized process systems
- Pre-engineered solutions based on Sartorius Process4Success™ platforms

www.sartorius-stedim.com/pod

turning science into solutions

Further complicating matters is the marketplace, which rewards low cost rather than high quality

Beyond Europe, the World Health Organization reports that drug shortages are an area of concern for both developed and developing countries. **Andy Gray,** Senior Lecturer, Department of Therapeutics and Medicines Management, Nelson R Mandela School of Medicine, University of KwaZulu-Natal, and **Henri R. Manasse,** PhD, Professor, Department of Pharmacy Administration, University of Illinois at Chicago, recently wrote that quality is an issue: "Manufacturing quality problems have been implicated in shortages of products produced by a limited number of suppliers" ***(5).*** The authors pointed to several factors contributing to shortages including: changes in procurement practices resulting in invalidation of previously accepted suppliers, increased global demand, consolidation of the manufacturing of generic products at only a handful of sites and changes in regulatory standards that require upgrades to facilities.

Next Steps for Industry and Regulatory: Quality Ratings?

The problem of drug shortages lacks an easy solution, and regulatory agencies often must make difficult decisions to keep supplies of essential medicines available.

For example, the consent decree between Ben Venue and FDA permits the company to continue releasing 106 medications essential for medical care ***(6).***

This is not an uncommon stipulation in consent decree situations, but is one that troubles FDA. Woodcock and Wosinska described in their article the moral hazard of allowing companies to release medically necessary products manufactured under violative conditions.

"Economic models predict that, in the face of the seeming intertemporal inconsistency created by dual FDA objectives, quality investments would be lower than if the FDA could use preemptive enforcement without regard for disruptions in medically necessary products. This dynamic may further reinforce the economic incentives to minimize quality investments given the nature of competition (based on price, not quality)," they state.

According to the authors, "FDA could support the buyers and payers in their purchase and reimbursement decisions by providing them with meaningful manufacturing quality metrics." An approach, they point out, that "Has been successfully used in many other settings where quality is difficult to observe or quality signals are difficult to interpret."

Whatever solutions are found, Woodcock and Wosinska's article shows that regulators are demonstrating a greater awareness of the economic pressures facing manufacturers of generic injectables. The question is, what can be done to ➤

ensure their products are of the highest quality?

References

1. Woodcock, J.; Wosinska, M. Economic and Technological Drivers of Generic Sterile Injectable Drug Shortages. *Clinical Pharmacology & Therapeutics;* 2013, 93:170-176 www.nature.com/clpt/journal/v93/n2/full/clpt2012220a.html.
2. House Committee on Oversight and Government Reform, *FDA's Contribution to the Drug Shortage Crisis,* 112th Cong., 2012 http://oversight.house.gov/report/fdas-contribution-to-the-drug-shortage-crisis.
3. FDA letter to Hon. Elijah Cummings, Committee on Oversight and Government Reform, 23 July 2012, democrats.oversight.house.gov/images/stories/2012-5778.Cummings.drug%20shortages.response.final.pdf.
4. Reflection paper on medicinal product supply shortages caused by manufacturing/Good Manufacturing Practice Compliance problems, European Medicines Agency: November 22, 2012, www.ema.europa.eu/docs/en_GB/document_library/Other/2012/11/WC500135113.pdf.
5. Gray, A.; Manasse, H.R. Shortages of medicines: a complex global challenge. *Bulletin of the World Health Organization*; 2012, 90:158-158A www.who.int/bulletin/volumes/90/3/11-101303/en/index.html.
6. *U.S. v. Ben Venue Laboratories, Inc.,* 1:13-cv- 00154 (N.D. Ohio 2013) www.elsevierbi.com/~/media/Supporting%20Documents/The%20Pink%20Sheet%20DAILY/2013/January/USA%20v%20Ben%20Venue%20012213.pdf.

2013 PDA UPCOMING EVENTS

MARCH EVENTS

5-6
Development of a Freeze Drying Process – From Formulation to a Robust Process Training Course
Prague, Czech Republic
https://europe.pda.org/TCFreezeDrying2013

5-6
Parenteral Packaging
Prague, Czech Republic
https://europe.pda.org/ParPack2013

7
Container Closure Development Training Course
Prague, Czech Republic
https://europe.pda.org/TCCCD2013

7
Interest Group Meeting Freeze Drying
Prague, Czech Republic
https://europe.pda.org/IGFreezeDrying2013

7
Interest Group Meeting Pre-filled Syringes
Prague, Czech Republic
https://europe.pda.org/IGPrefilled2013

7
Selection and Utilization of Glass Containers in Pharmaceutical Packaging Training Course
Prague, Czech Republic
https://europe.pda.org/TCParPack2013

18-22
Pharmaceutical Products Supply Chain Integrity: A Five Day Training Series
Bethesda, Maryland
www.pda.org/pharmaintegrity

19
Interest Group Meeting Visual Inspection
Berlin, Germany
https://europe.pda.org/IGVisInsp2013

20-21
An Introduction to Visual Inspection Training Course
Berlin, Germany
https://europe.pda.org/TCVisInsp2013

APRIL

2-4
Preparation of Virus Spikes used for Virus Clearance Studies and Virus Filtration Training Course
Bethesda, Maryland
www.pda.org/viruspikes

8-12
Aseptic Processing Training Program – Session 2, Week 1 (Week 2: May 6-10) SOLD OUT
Bethesda, Maryland
www.pda.org/2013aseptic2

15-17
2013 PDA Annual Meeting
Orlando, Florida
www.pdaannualmeeting.org

www.pda.org

For an updated PDA calendar of events please visit www.pda.org/calendar.

Save these dates!

EVENTS

17-18
2013 PDA Human Factors and Human Error Reduction Workshop
Orlando, Florida
www.pda.org/humanfactors2013

18-19
2013 PDA Annual Meeting Course Series
Orlando, Florida
www.pdaannualmeeting.org/courses

30-1 May
An Introduction to Visual Inspection Training Course – Session 1
Bethesda, Maryland
www.pda.org/visualinspectionlab1

MAY EVENTS

13
Essential Elements of Extractables & Leachables: From Material Selection to Final Report
Bethesda, Maryland
www.pda.org/essentialelements2013

14-15
2013 PDA/FDA Container Closure Components and Systems Workshop
Bethesda, Maryland
www.pda.org/containerclosure2013

15-16
2013 PDA/FDA Glass Packaging Conference
Bethesda, Maryland
www.pda.org/glass2013

17
Identification and Classification of Nonconformities in Ampoules, Syringes and Injection Devices for Pharmaceutical Manufacturers
Bethesda, Maryland
www.pda.org/identification2013

20-21
2013 PDA/FDA Process Validation Workshop
Bethesda, Maryland
www.pda.org/processval2013

22-23
2013 PDA/FDA Process Validation Course Series
Bethesda, Maryland
www.pda.org/provalcourses2013

Industry Views on Quality-Related Shortages

Damned If You Do, Damned If You Don't

Karen Ginsbury, PCI

The current situation with drug shortages may have been anticipated when the U.S. FDA stepped up their enforcement actions around 2010. The number of warning letters increased dramatically with consequential shutdowns and recalls at major suppliers, particularly of injectable drugs.

National drug shortages, however, are not solely an outcome of compliance activity—statistics show that these have been on the rise since 2007, so there may well be other contributing causes.

Regarding compliance issues, **Margaret Hamburg,** MD, FDA Commissioner, announced upon assuming her office that FDA would have "fast, effective and aggressive" enforcement and this policy was an outcome of the Heparin contamination scandal as well as other issues with deliberate contamination of pharmaceuticals.

On the one hand, FDA is in trouble if they are not an effective enforcement agency; on the other hand, when they are aggressive, the outcome can be bad for the patient. "Lack of sterility assurance" is very different from "contaminated product" and a regulator has to constantly weigh risk to benefit when taking aggressive action. The other question that the patient might ask is "where was the regulator all those years" if the problems only came to light in the past three or four years and how did matters become so serious at major producers?

It would seem that increased frequency of inspection and effective implementation of serious and appropriate corrective actions might be the way forward rather than immediate shutdown. This need not be considered as "rewarding bad behavior" because when there is evidence of repeated misdemeanors at a manufacturer that would indeed be the time to shut a facility down.

The outcome of overly aggressive regulatory action, however, can be devastating as evidenced by Teva's recent decision to shut down their Irvine, Calif. manufacturing facility. This leads to the question: can a regulator punish a manufacturer for identifying non-profitability of compliance?

About the Author

Karen Ginsbury is a London-trained pharmacist, with a master's degree in microbiology. Expert in all aspects of cleanrooms and microbiology,she has a second area of expertise in the GMP manufacture of investigational drugs. With over 20 years of experience in the industry, Karen has hands-on experience of quality assurance and setting up GMP compliant quality systems.

Companies Can Improve Quality By Starting Small

Tricia Griffiths, EMD Millipore

In this issue's cover story, points were made concerning global regulatory actions specific to generic sterile manufacturers, the lack of quality and the effect on the global drug supply. The overall message is clear: It is absolutely critical that all drug manufacturers, generic or not, produce products that are safe, effective and pure, while ensuring the security of supply and meeting the quality standards required for pharmaceuticals.

Pharmaceuticals manufacturers strive to produce drugs that can improve the quality of life for people and animals. Regulatory bodies understand this is critical, especially for some of the drugs that are "orphan" in nature, or part of the generic group of drugs. Regulatory bodies endeavor to put patient safety at the utmost priority, and this includes potentially issuing consent decrees. This is a fine line that the regulatory bodies have to walk; however, it is their responsibility to ensure that the drugs available on the market do not harm the patients.

Pharmaceutical companies are trying to make money. Making drugs, however, is expensive due to requirements for R&D, clinical trials, etc., and the cost of manufacturing (including facility/equipment operation and maintenance) and the overhead cost of quality.

Instituting more "up front" quality control testing is costly, but it can actually save money by ensuring the materials used for manufacturing are safe, effective and pure and that the testing results are guaranteed to be accurate. Small changes in quality systems can have a tremendous impact in moving in the right direction. These simple changes could involve instituting a more robust auditing process for approved suppliers, adding more environmental monitoring samples to the EM program or conducting a thorough retrospective evaluation of validation protocols to ensure adequacy.

These are just examples of how small steps towards better quality can help mitigate drug shortages which are a result of quality challenges.

[Note: These are the opinions of the author, not of EMD Millipore**.]**

About the Author

Tricia Griffiths currently works for EMD Millipore in the BioMonitoring Regional Marketing group specializing in QC Microbiology testing for Sterility, Mycoplasma and Services. She received a BS in Biotechnology from the University of Massachusetts – Lowell in 2001.

vai

Veltek Associates, Inc.

One Wipe, MULTIPLE SOLUTIONS

For more than 30 years, VAI has pioneered the design and manufacture of hundreds of clean room solutions.

- Cleanest wipe in the industry
- Asepti-Fill® closed filling system
- Laundered in Class 1
- Saturated wipes are made with WFI
- Lot Specific Documention for all wipers
- Laser cut sealed edges

Quadruple Bagged using the ABCD Introduction System®

No other company offers this broad a range of wipers...

WIPEDOWN	PROCESS 2 WIPE	STERI-PEROX® WIPE	HYPO-CHLOR® Wipe	DECON-Clean® Wipe	ALCOH-Wipe®	STEEL-BRIGHT® Wipe	DAS-Wipe®
Dry cleaning wipe	70% USP IPA in Water for Injection saturated wipe	Saturated Hydrogen Peroxide Wipe	Saturated Sodium Hypochlorite Wipe	Removes residue from disinfecting agents	Saturated with DECON-AHOL® WFI 70% USP Isopropyl Alcohol	Stainless Steel Cleaning wipe	Stainless Steel cleaning and lubricant wipe

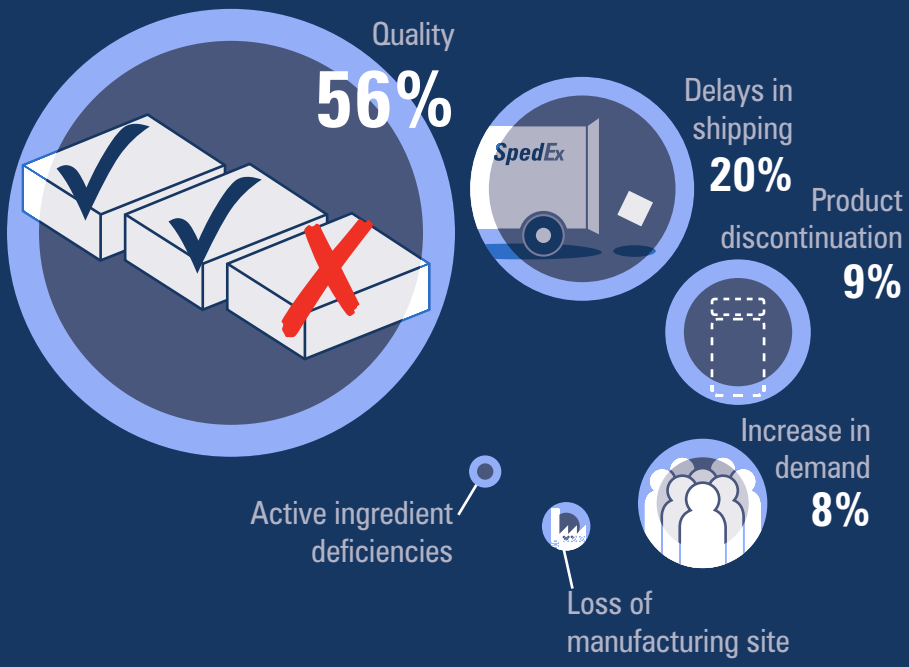
www.sterile.com

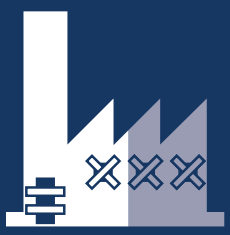
1-888-4-STERILE

Drug Shortages in the United States: A Snapshot

Close to **67%** of drugs listed by the U.S. FDA in **shortage** are injectables.

Reasons for Shortages





58% of 219 drug shortages due to facility under **FDA remediation.**

Only **1%** of ANDAs for **sterile injectables** approved in 2000-2011 had **backup facilities** (compared to 20% for NDAs).

Sources

Current Drug Shortages Index, U.S. Food and Drug Administration: January 29, 2013, www.fda.gov/drugs/drugsafety/drugshortages/ucm050792.htm.

Woodcock, J. and Wosinska, M. 2013. Economic and Technological Drivers of Generic Sterile Injectable Drug Shortages. *Clinical Pharmacology & Therapeutics* 93: 170-176, www.nature.com/clpt/journal/v93/n2/full/clpt2012220a.html.

House Committee on Oversight and Government Reform, *FDA's Contribution to the Drug Shortage Crisis,* 112th Cong., 2012, oversight.house.gov/wp-content/uploads/2012/06/6-15-2012-Report-FDAs-Contribution-to-the-Drug-Shortage-Crisis.pdf.

ONE 2 ONE™

Parenteral Contract Manufacturing Service of Hospira

Our comfort zone is global parenteral manufacturing

- **Biologics**
- Highly Potent Drugs
- Cytotoxics
- Betalactams
- Controlled Substances
- Sterile Compounding
- Single-Use Technology
- Lyophilization
- Global Regulatory Services
- QP Release

Discover your comfort zone at one2onecmo.com

Get your custom report online or contact One 2 One.
Call +1-224-212-2267 or +44 (0) 1926 835 554 or e-mail one2one@hospira.com

Your Parenteral Comfort Zone

ONE 2 ONE™

Parenteral Contract Manufacturing Service of Hospira

P11-3517A-Jan., 12

2013 PDA ANNUAL MEETING

Annual Meeting Plenary Talk to Address Shortages

Rebecca Stauffer, PDA

The recent article by **Janet Woodcock,** MD, Director, CDER, U.S. FDA, and **Marta Wosinska,** PhD, Director, Economics Staff, CDER, FDA, explored the link between quality-related manufacturing issues and shortages of generic injectable drugs (see story on p. 18). So, what can manufacturers do to alleviate the issue of drug shortages? And how can quality serve as a guide throughout the entire manufacturing process?

Marty Nealey, Vice President of Operations and Plant Manager, Hospira, will tackle these topics in his presentation on drug shortages at the upcoming *2013 PDA Annual Meeting* in Orlando, Fla.

"I am looking forward to sharing an industry perspective on the topic of drug shortages—one of the most paramount topics for our generation. My presentation will cover several topics and perspectives," he said. Not only will his talk cover the key factors that have led to drug shortages in recent years, but he will also explore how industry has been responding to the issue based on his experience managing a plant that supplies products associated with shortages. In addition, his presentation will offer "A view of the invaluable and cooperative relationship between FDA and industry to ensure supply of critical medicines to patients."

Nealey brings a unique perspective on the issue: his company Hospira has been working with FDA since a series of quality control issues were uncovered at some of its U.S. plants, resulting in issuance of a warning letter in April 2010. This has led to shortages of key injectable drugs as products were recalled and manufacturing stalled.

He joined Hospira in early 2012, bringing with him 24 years of experience in pharma, including stints at Burroughs Wellcome, Merck, AstraZeneca and Purdue Pharma.

"At Hospira, I am one of many leaders and employees who are every day committed to our remediation efforts, building strong quality systems and delivering critical medicines to patients," he said.

"Hospira is focused on addressing shortages by working closely with the FDA and other stakeholders to avert and less-

en the impact of current shortages, while investing hundreds of millions of dollars to help prevent future ones. This work will ensure additional critical infrastructure that minimizes drug shortages."

According to Nealey, the changes Hospira is making include increasing capacity at existing facilities, building additional capacity through a 1.1. million square foot facility with the ability to produce 500 million units per year and improving processes at existing manufacturing plants. The latter includes a new testing lab under construction at the company's Rocky Mount, N.C. facility.

The company also continues to work closely with FDA to resolve manufacturing issues and ensure supply of needed medications.

"We believe we've demonstrated unique transparency with all of our stakeholders and have worked diligently to communicate openly and regularly about product availability," Nealey said. "In fact, Hospira has been voluntarily reporting shortages and collaborating with the FDA to avert them for some time. We were, in fact, the only pharma firm that publicly supported legislation passed by Congress in 2012 that broadened reporting of potential shortages."

Further, the company has expanded its focus on quality in the manufacturing process, taking a Quality by Design (QbD) approach to manufacturing.

"At some level, it's quite simple: understand your products, define and confirm the process and execute it well. The key to success is ensuring you are making the right investments in your facilities and equipment, and, ensuring every smiling face in your plant is committed to owning quality," he emphasized. "For me, as VP of Operations and Plant Manager, I make it clear every day that 'I Own Quality.' Hospira is counting on me to 'Make a Difference'—which is one of our company mantras—and we are well on our way."

Quality has also served as the impetus for expanding the company's staff. In his February conference call to investors, the company's CEO, **Michael Ball,** announced that among the company's accomplishments in 2012, "We invested in people—the right people—who are reinforcing a quality culture and operational excellence throughout the organization."

Last December at a conference sponsored by the Food and Drug Law Institute (FDLI), **Zena Kaufman,** Senior Vice President, Global Quality, Hospira further detailed the quality "roadmap" the company is taking at tackling quality issues. She cited the development of quality "metrics" that would serve as an assessment tool for investigations within plants. Nealey said that these new metrics "Are the way in which we will monitor the continuous effec tiveness of our quality systems at Hospira."

During her talk, Kaufman noted that Hospira continues to refine the meaning of quality improvement.

Continued at bottom page 43

A safer future starts here and now.
Environmental Monitoring by EMD Millipore.

Environmental monitoring is essential in today's industries. By preventing the release of potentially contaminated products, it not only reduces risk to consumers and producers, but also saves time and expenses. With a vision of a safer future, EMD Millipore provides a complete Environmental Monitoring program to monitor your manufacturing and lab environments. Rely on our high-quality products, dedicated service and professional expertise, to ensure you stay on the safe side.

A single source to meet all your Environmental Monitoring needs

Pharmaceutical manufacturing and lab environments have to be more than visibly clean. They need to be immaculate to a degree that only sensitive techniques can establish. With the many risks to be aware of, it is reassuring to have an experienced provider of monitoring solutions by your side. As a one-stop-supplier, EMD Millipore maintains a complete program of BioMonitoring products and services, providing particle counters, active microbial air samplers, settle plates, contact plates and slides as well as swabs that save time, reduce costs and, above all, minimize the risks to consumers and manufacturers.

Air Particle counting solutions

APC Smart Touch
Ergo Touch Pro 2

Easy handling to keep the risks at bay – and expenses down

At EMD Millipore, we believe that user-friendly and reliable monitoring solutions not only minimize the risks but also reduce costs in the long-term. With this in mind we have compiled a comprehensive portfolio for environmental monitoring, covering particle counting, active and passive air monitoring as well as surface and personnel monitoring solutions. Designed for use in environments from less critical to highly critical cleanrooms and isolators, these products follow the basic concept of making contaminant testing convenient, fast and reliable – to contain the risks while saving you time and expenses.

Personnel and surface monitoring solutions

ICR_{plus} contact plates
ICR Swabs

Services for carefree and reliable Environmental Monitoring

For EMD Millipore, it is important that the products we offer follow international guidelines for critical and controlled environments, such as EU cGMP, USP or FDA Aseptic Guidance. But we go a step further by providing a wide range of after-sales services to our customers, including On-site Installation and Operational Qualification (IQ/OQ), maintenance, calibration, product validation and application. Cooperating closely with users is essential to us. We feel confident that our products meet the needs of our users, making routine environmental monitoring more convenient and less risk-prone.

Active and passive air monitoring

MAS 100-NT®
RCS® High Flow Touch
ICR settle plates

For all your environmental monitoring needs, you're in safe hands of EMD Millipore. Visit us at:
www.emdmillipore.com/environmental-monitoring

EMD MILLIPORE

There is more to clean environments than meets the eye.

Our vision of a safer future: Air & Surface Monitoring Solutions by EMD Millipore.

Rely on the complete EMD Millipore BioMonitoring program to satisfy your environmental testing needs for the pharmaceutical industry. We provide easy-to-use solutions, excellent service and long-standing expertise:

- Particle Counters
- Active Microbial Air Samplers
- Settle Plates
- Contact Plates and Slides
- Swabs

Ensure a safer future by monitoring your manufacturing and lab environments with EMD Millipore.

www.emdmillipore.com/environmental-monitoring

EMD Millipore is a division of
Merck KGaA, Darmstadt, Germany

snapshot 2013 PDA ANNUAL MEETING

Hot Regulatory Topics on Agenda

Rebecca Stauffer, PDA

The *2013 PDA Annual Meeting* will feature presentations on many topics, including issues related to regulation.

On the first day of the conference, **Cyndi Poetker,** Senior Program Manager of Global Standards and Serialization, Abbott Laboratories, will discuss "Serialization and Bar Coding" in the session, "Complementing Your Quality Systems with Technology While Meeting New Regulatory Requirements in a Global Market." Over the past few years, the U.S. FDA has been working toward serialization standards and development of a "track and trace" system which would monitor the movement of a finished pharmaceutical product through the supply chain.

The following day, **Emily Shacter,** Phd, Consultant, ThinkFDA, will discuss how industry and regulators can work together to face the challenges of new pharmaceutical products, such as biosimilars, at one of the roundtable sessions in the morning. If the name sounds familiar, it's because she spoke about the three biosimilar guidances FDA released last year in the closing plenary session of the *2012 PDA Annual Meeting*.

Later that same day, Shacter will moderate the session, "A-Vax: A QbD Case Study and Study Guide" (or more on A-VAx, see the Feb. 2012 issue of the *PDA Letter,* p. 20). **John Finkbohner,** PhD, Senior Director of Regulatory Affairs, MedImmune, and **Amin Khan,** PhD, Global Head of Technical Development and MS&T, Novartis, will discuss the results of the case study and the regulatory considerations of QbD in this area.

In another concurrent session that day, **Scott Bozzone,** PhD, Quality Systems and Technical Services-Validation, Pfizer, and **Greg Flexman,** Process and Risk Analysis, Grifols, will probe how recent EMA and FDA guidances impact process validation.

RAQAB and Regulatory IG Meetings

In addition to these sessions, PDA's Regulatory Affairs and Quality Advisory Board (RAQAB) will also meet on Sunday, April 14 from 11:00 a.m. to 4:00 p.m. The next day, the following RAQAB interest groups will meet from 4:30 to 6:00 p.m.: Quality Risk Management, Management on Outsourced Operations and Inspection Trends. On April 16, the Pharmacopoeial Interest Group will meet from 4:00 to 5:30 p.m. Please visit pdaannualmeeting.org for more information about these events.

PACKAGE INTEGRITY SOLUTIONS

LEADERS IN TECHNOLOGY AND INSPECTION METHODS

pti Inspection Systems

PTI Inspection Systems - Micro Leak Testing Technologies VeriPac & E-Scan Offline Laboratory Testing

914.337.2005 | **www.ptiusa.com**

Nikka

Nikka Densok USA - High Voltage Leak Detection (HVLD) Technology 100% Inline Testing

303.202.6190 | **www.nikkadensok.com**

LIGHTHOUSE
The Science of Pharmaceutical Manufacturing

Lighthouse Instruments - Headspace Analysis, Offline & 100% Online Solutions

434.293.3081
www.lighthouseinstruments.com

NON-DESTRUCTIVE INSPECTION SOLUTIONS & CCIT FOR THE PHARMACEUTICAL INDUSTRY

Empty & pre-filled syringes | Liquid filled & lyophilized vials | Ampoules | BFS

Regulatory Briefs

Regulatory briefs are compiled by PDA member volunteers and staff directly from official government/compendial releases. Links to additional information and documentation are available at www.pda.org/regulatorynews.

North America

Comments Due on Postapproval Modifications to Combination Products Draft Guidance

In January, the U.S. FDA released a draft guidance, *Submissions for Postapproval Modifications to a Combination Product Approved Under a BLA, NDA, or PMA,* intended to provide underlying elements for determining which marketing submission should be required for postapproval changes to a combination product approved under one marketing application, such as a biologics license application (BLA), a new drug application (NDA) or a device premarket approval application (PMA). Comments are due by April 22.

Final Rule Available on CGMPs for Combination Products

The U.S. FDA published the Agency's final rule on CGMP requirements for combination products in January. This rule is supposed to clarify which CGMP requirements apply for drugs, devices and biological products united to create combination products. It also lays out a streamlined regulatory framework for companies to demonstrate CGMP compliance for "single-entity" and "co-packaged" combination products.

The Agency began addressing CGMP requirements for combination products in 2004 with a draft guidance before issuing a proposed rule in 2009. This final rule will be effective July 22.

U.S. FDA Releases Therapeutic Protein Products Draft Guidance

On February 11, the U.S. FDA released a draft guidance for industry addressing immunogenicity assessments for therapeutic protein products. This guidance is intended to assist drug manufacturers in developing risk-based approaches in both the preclinical and clinical phases of the development of therapeutic protein products that evaluate and mitigate immune responses that could adversely affect safety and efficacy.

Adverse events caused by immune responses have caused sponsors to terminate development of therapeutic protein products. The Agency hopes the guidance will spur the development of risk mitigation strategies.

Comments are due April 12.

Europe

EMA Releases Draft Guidances on Cross-Contamination in Shared Facilities

The EMA recently released a draft guideline on setting exposure limits to use as risk identification for drug manufacturing in shared facilities, approved by the Safety Working Party in December. This draft guidance seeks to set scientifically-based threshold values for individual active substances applied as risk identification. The manufacturing of different pharmaceutical products in shared facilities provides the potential for cross-contamination due to active substance residues remaining on production equipment or other contact surfaces after cleaning. Active substances need to be restricted to a certain level considered safe. The development of a threshold value (a level of permitted daily exposure, or PDE) is key to this risk identification process.

Comments on this draft guidance are due by June 30.

EMA Publishes Guidance on Summaries of Product Characteristics

In late January, EMA published a guidance for pharmaceutical companies detailing how to prepare and review summaries of product characteristics (SmPCs), consisting of presentations listing the information required in each section of the SmPC along with background information. Prepared by EMA's SmPC Advisory Group, the guidance also outlines the European Commission's guideline on SmPCs. The information within SmPCs is a core feature of marketing authorizations for all medicine products in the European Union and is also the basis for preparing package leaflets.

European Commission Publishes GMP—Related Draft Guidelines

In early February, the European Commission published two GMP-related guidelines: *Guidelines On The Formalised Risk Assessment For Ascertaining The Appropriate Good Manufacturing Practice For Excipients Of Medicinal Products For Human Use* and *Guidelines On The Principles Of Good Distribution Practices For Active Substances For Medicinal Products For Human Use.* The first guideline requires companies to use quality risk management principles within ICH Q9 to assess and clarify risks presented by excipients while the second requires distributors of active substances to develop and maintain a quality system that lays out responsibilities, processes, and risk management procedures.

Comments on both draft guidelines are due April 30.

International

WHO Proposes Updated Annex 3 Text

The World Health Organization published some proposed updated text for Annex 3 in the *WHO Technical Report Series, No. 961* in January. The proposed text concerns the following parts of Annex 3: Section 1 (pharmaceutical quality system), Section 2 (GMP for pharmaceutical products), Section 7 (contract production and analysis) and Section 17 (good practices in quality control). Comments on the proposed updated text are due March 29.

Environmental Monitoring

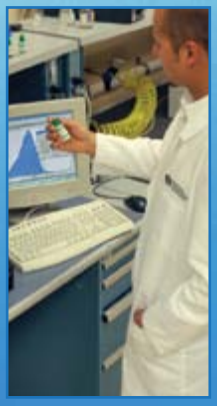
Particle Counting

Microbial Sampling

Real-Time Microbial

Validation and Compliance

Training and Education



Service and Calibration

Viable and Non-Viable. Together. Validated.

Visit us on the web at www.pmeasuring.com or call 1 (303) 443-7100.

PARTICLE MEASURING SYSTEMS

2013 PDA ANNUAL MEETING

Expand Your Expertise at Annual

2013 PDA Annual Meeting • Orlando, Fla. • April 15–17 • pdaannualmeeting.org

Co-Chairs Hal Baseman, ValSource, and Maik Jornitz, G-Con Manuf, LLC

This year's Annual Meeting theme is *Modern Sterile Product Manufacturing, Exploring Best Practices and Seeking New Approaches*. This is more than a catchy phrase; it is an essential strategy for successful sterile product manufacturing in today's market place. The planning committee recognizes the challenges the industry faces and have designed a conference which will help attendees better appreciate and meet these challenges.

We encourage you to attend the meeting and participate in as many of the sessions and events as possible. To help you, we would like to point out some of the highlights you don't want to miss, so come out of the cold and join us this April in sunny Orlando, Fla.

The meeting will start off with keynote addresses presenting the most important reason for attending this meeting and the purpose of our work—meeting the needs of our customers, the patients, by developing and providing the best products possible. The keynote speakers will give us a reminder of the importance of our work with actual cases, using their experiences as examples of what we stand for.

After the keynote talks, the meeting will shift to discussions on the effective ways and technologies to fulfill the requirements of safe and best quality products, by breaking into concurrent "Biological Science," "Sterile Product Manufacturing" and "Quality" tracks.

As the conference's theme implies, much of the meeting content will emphasize fresh approaches to meeting the challenges raised by new product categories, manufacturing designs, and global regulatory and patient expectations—including presentations on new industry topics, such as innovative modular production platforms and flexible laboratory facilities, plant expressed pharmaceuticals, advances in cell culture-based vaccine manufacture, the development and commercial manufacture of biosimilars, outsourcing of vaccines and sterile products and the needed use of process analytical technology.

Other sessions will explore opportunities as well as challenges with the implementation of new technologies, including use and validation of single-use manufacturing and filling systems, continued process verification, cytotoxic facility design and operation, innovative uses of polymers for filling of biological parenteral products, case studies of the use of closed vial manufacturing, the pragmatic application and utilization of rapid microbiological monitoring systems, the assurance of quality of supplier provided services such as ready to use components, advanced sterilization and aseptic processing systems, effective methods to investigate, correct and prevent process failures and process risk assessment and mitigation.

Concurrent sessions will focus on the core and fundamental platform of sterile product manufacturing with presentations by top PDA TRI instructors on virus filtration, single-use systems, visual inspection, SIP, process validation and statistical process control.

Two special sessions will be devoted to personal improvement and career enhancement, with a panel discussion on shifting career trends and leadership development and a new session on opportunities to become more involved, engaged and influential in PDA task forces and working groups.

Perhaps the most informational exchange will take place during the second plenary session, which is devoted to one of the most important concerns facing drug manufacturers, regulators and our customers today—confidence in the uninterrupted supply of vital healthcare products. To address these concerns, there will be presentations from two of the industry's notable experts, who will speak on counterfeiting and drug shortages.

Finally, our closing plenary session will feature expert presenters on looking ahead to future drug developments and patient treatments. They will let us look into the very encouraging treatment future, which will not just be reactive, but proactive and preventative.

Aside from the planned sessions, there are abundant opportunities for networking and exchange of ideas with friends, colleagues, regulators and industry leaders at networking events and during breaks in the exhibit hall. The conveniently placed exhibit hall will showcase over 100 suppliers; there to showcase and answer questions on the newest technologies and services. In addition, several informative posters will be on display in and around the hall, presenting the latest in studies and concepts related to sterile product manufacture. In an effort to better encourage attendee participation and networking, the conference will provide a venue for 14 fundamental interest groups to hold their highly interactive meetings on subjects representing a broad range of science and manufacturing technology.

As you can see, there are a lot of sessions, tracks and events. To further assist the attendee, PDA will provide a free, downloadable app which will provide useful information on events and schedules.

We are looking forward to seeing you at the *2013 PDA Annual Meeting* at the Peabody Hotel in Orlando, Fla. You won't be disappointed! So, unless you stay home in the cold, come join your friends and colleagues at the *2013 PDA Annual Meeting* to listen to interesting presentations, network with industry leaders and celebrate advances in manufacturing.

If you have any further questions, please do not hesitate to contact **Wanda Neal** (neal@pda.org).

ONE SOURCE℠
ONE LOCATION

SIMPLIFY YOUR CONTRACT MANUFACTURING

Simplify your contract manufacturing with process development, cell-culture manufacturing, formulation development, vial and syringe filling and secondary packaging all in one location. Accelerate the delivery of your life-enhancing products to patients, and work with one point of contact and one set of business practices.

To see our capabilities videos, visit www.youtube.com/user/cookpharmica or contact our Business Development team at busdev@cookpharmica.com.

COOK® PHARMICA

DEVELOPMENT | CLINICAL | COMMERCIAL | DRUG SUBSTANCE | DRUG PRODUCT

2013 PDA ANNUAL MEETING Human Factors Impact Pharma Manufacturing

2013 PDA Human Factors and Human Error Reduction Workshop • Orlando, Fla. • April 17–18 • www.pda.org/humanfactors2013

Christina Mendat, PhD, Radius Product Development

Are you interested in understanding how human factors can help prevent human error in manufacturing? Do you want to learn more about preventing nonconformance in biopharmaceutical processing? Looking for guidance from the experts in human factors and viewpoints regarding this topic from the U.S. FDA? Then PDA invites you to attend its upcoming *2013 PDA Human Factors and Human Error Reduction Workshop* in April at the *2013 PDA Annual Meeting.*

A great deal of recent attention has been on human factors in medical devices ranging from simple injection devices to complex medical infusion systems. A lack of attention, however, has been on the processes which are responsible for developing the drugs and the environments in which they are developed. Analysis of the root causes of deviations in bioprocess supply chains has most commonly been traced back to human error (more than 50% according to a recent survey of BioPhorum member companies ***(1)***). This highlights how human factors play just as important a role in biopharmaceutical processing and manufacturing as they do in device design.

This workshop will introduce the audience to the science of human factors and will illustrate the significant role and impact human factors has made in other industries ranging from aviation to nuclear control rooms. Following this brief introduction, the audience will participate in interactive sessions where the attendees will learn how to use various human factors tools to help assess, understand and be armed with the information needed to address performance and/or safety concerns in processing and manufacturing facilities.

During these sessions, case studies will be shared by the moderators to highlight potential areas of concern and those that have been improved through the use of human factors tool and techniques resulting in improvements of operations, layout, workflow, and overall system design.

Attendees should leave this meeting with an understanding of the science of human factors and how it can be integrated into system design, evaluate processes and reduce human error and nonconformance.

Reference

1. Chalk, S. 2012. Reducing Human Error: Leading industry collaborators outline top 10 best practices for human error reduction. *BioPharm International* 25: 58-59 www.biopharminternational.com/biopharm/Quality/Reducing-Human-Error/ArticleStandard/Article/detail/775162.

Experts to Discuss Glass Quality at May Conference

2013 PDA/FDA Glass Packaging Conference • Bethesda, Md. • May 15–16 • www.pda.org/glass2013

Nick DeBello, Wheaton Industries Inc. and F. William Bogle, Genesis Packaging Technologies

PDA and the U.S. FDA are once again sponsoring the *PDA/FDA Glass Packaging Conference* now in its third year. As in the past, this year's agenda will be both informative and educational. There will be six plenary sessions covering a number of topics involving glass packaging, including the transformation of raw materials into tubular vials and integrated measures that can control glass quality during manufacturing.

Plenary Session 3,"Raw Material to Tubular Vial," will provide an insight into the entire manufacturing process from raw materials, batching, testing/control, glass tube forming and fabrication of tubular vials. On the surface, these processes may look relatively simple, but in actuality they are highly complex, requiring extensive training and skill. Through presentations in this session, attendees will gain a greater knowledge and appreciation for the technology and innovation employed to deliver a quality product to the pharmaceutical market.

During the conference, results from the Glass Handling Task Force will be shared with the audience.

The task force was formed in 2012 to examine glass defects introduced in the manufacturing process. Its scope is to evaluate every step of the process, from receipt of the glass components into the manufacturing facility manufacturing and shipment to the end user.

There will be six plenary sessions covering a number of topics involving glass packaging

The task force comprises 61 members, representing pharmaceutical and biotech manufacturing companies, glass manufacturers as well as equipment suppliers. It is divided into two groups, one specializing in vials, and the second concentrating on syringes and cartridges.

The task force will survey the PDA membership by having members' companies go through their manufacturing lines and identify areas where glass damage may occur. All defects will be compared to *Technical Report 43: Identification and Classification of Nonconformities in Molded and Tubular Glass Containers for Pharmaceutical Manufacturing* for identification and to determine levels of severity. With the completion of the survey and the compilation of the data, the two groups will find ways to mitigate points of damage and in certain cases perform a failure modes and effects analysis.

The syringe/cartridge group is jointly headed by **Pat Begley,** Manager of Pharmaceutical Process and Technology, BD and **Mark Fitzgerald,** Commercial Project Manager, Nipro while the vial group is headed by **Tony Perry,** Director of Regional Quality for Pharmaceutical Packaging, North America, Schott. The survey was developed by this group along with **Roger Asselta,** Vice President of Technical Affairs, and **Lawrence Pepper,** Director of Marketing, both of Genesis Packaging Technologies. The initial test surveys will be conducted at selected facilities of task force members during the next three weeks and once that stage is completed the final survey will be sent to the membership at large.

We look forward to receiving input from all of you and sharing the data that we develop.

Lifecycle Approach Key to Process Validation

2013 PDA/FDA Process Validation Workshop • Bethesda, Md. • May 20–21 • www.pda.org/processval2013

Rebecca A. Devine, PhD, Regulatory Consultant

Much has been going on in the area of process validation and companies are challenged with keeping current on evolving expectations. In January 2011, the U.S. FDA published a revision to its guidance, *Process Validation: General Principles and Practices.* Then, in 2012 the EMA circulated the draft, *Guideline on Process Validation*. PDA will shortly be publishing *Technical Report 60: Process Validation: A Lifecycle Approach* intended to help the industry understand best practices for implementing sound process validation programs that meet current expectations. This technical report examines each of the three stages of the lifecycle:

1. Process Design
2. Process Qualification
3. Continued Process Verification

In an effort to promote dialogue PDA has held numerous workshops that have brought successful approaches and additional understanding in the area of process validation. Building on the content of the technial report, PDA will host the *2013 PDA/FDA Process Validation Workshop*: *Practical Implementation of the Life Cycle Approach.* This workshop will take place in Bethesda, Md. May 20–21, 2013. The workshop will bring together industry and regulatory experts to discuss practical ways to apply the concepts in the FDA and EMA guidance documents, and to discuss the approaches outlined in the report.

Assurance of a well-controlled process can be gained by better process understanding and control of process variables. Understanding begins as the process is designed and developed. The more knowledge acquired during this early stage, the more efficient later lifecycle stage activities will be. One of the workshop sessions will explore how companies can develop and implement plans for determining, identifying and interpreting information from process design in an effort to develop process control strategies and process validation approaches. This session will feature conceptual approaches to process design such as use of prior knowledge, identifying process variables and developing the control strategy.

Information that increases knowledge and potentially improves the process has to be effectively gathered

Stage 2 of the lifecycle approach to process validation builds on the knowledge gained during Stage 1, Process Design, to establish testing criteria in Stage 2, Process Qualification. Sessions focused on Stage 2 will present methods that can be used to design test functions and acceptance criteria during process performance qualification to assure that control strategies are effective. Case studies will be presented on drug substance large and small molecules followed by a case study on drug products.

As companies move through commercial production, more knowledge is gained towards full process understanding. It is essential that both new and legacy processes remain in control. Information that increases knowledge and potentially improves the process has to be effectively gathered and communicated. Stage 3 of the lifecycle approach, Continued Process Verification, assures such monitoring and control is continued. Two sessions on this topic will focus on developing strategies for determining the sources of information, presentation of data and interpretation of results to achieve success in this stage.

The *2013 PDA/FDA Process Validation Workshop* is designed to be interactive, thus there will be three breakout sessions that will explore process validation challenges and benefits. The breakouts will cover small molecules, large molecules, and drug product areas as each of these areas will face unique challenges and opportunities. Feedback from the breakout sessions will be brought back to the entire audience and will be discussed by a panel of experts including invited regulatory authority panel members. PDA and the workshop's planning committee invite you to join us at this useful workshop to contribute your thinking and to hear what your partners in industry are doing to assure practical implementation of compliant and high quality approaches to process validation using a lifecycle approach.

TRI Offers One-of-a-Kind Courses Following Annual Meeting

Stephanie Ko, PDA

If this will be your first time attending the upcoming *2013 PDA Annual Meeting,* you may not be aware that the PDA Training and Research Institute (TRI) will offer six training courses immediately following the conference. What is unique about these courses is that they are all based on PDA's very own technical reports and PCMO[SM] (Paradigm Change in Manufacturing Operations) documents, reflecting the best practices currently available in the industry. These courses are offered nowhere else but PDA!

Annual Meeting Plenary Talk to Address Shortages continued from page 31

"Quality improvement is less defined," she said. "As we move out of compliance remediation we are further refining what is quality improvement…what we term 'nirvana' is quality lifecycle optimization."

In his upcoming presentation, Nealey promises to "Touch on the importance of the quality systems and the management processes necessary to sustain them."

Ultimately, his focus remains on ensuring the safety of the end users of the company's products while balancing the need for ample supply.

"It's about ensuring the things I commit to personally have the opportunity to have a huge impact on patients; it's what keeps me grounded and gives me energy for the long days required to drive a large manufacturing plant," he said.

To learn more about Nealey's thoughts and experiences on drug shortages, PDA urges you to consider attending the *2013 PDA Annual Meeting.*

About the Expert

Marty Nealey is currently Vice President of Operations and Plant Manager for Hospira responsible for the Rocky Mount, N.C. manufacturing site. Marty joined Hospira in January 2012, bringing 24 years of experience from the pharmaceutical industry in the areas of quality, process development, engineering, facility management, contract operations, and manufacturing site leadership.

PDA Chair Anders Vinther

Reflections — And Look Ahead

2013 — A Year Of Expansion

2012 was a phenomenal business year for PDA—and for our membership in so many ways. We held more than 25 large conferences, several of which we co-sponsored with the U.S. FDA, EMA or PIC/S. With thousands and thousands of members attending these conferences, they were not only packed with relevant information but they were also great venues for networking. The Training and Research Institute (TRI) offered a wealth of courses to more than 1,500 people both as hands-on training in our state-of-the-art aseptic processing and laboratory facility and as classroom training. We published more technical reports, proceedings and surveys than ever before. New PDA Chapters were established in Texas and in India with great excitement, and we are looking forward to welcoming these new members at 2013 PDA events. We stayed at the forefront of regulatory news and involvement by submitting comments on many emerging topics that are of relevance to our industry worldwide. On a more "domestic"' level we implemented a completely new financial system, which is helping to further improve our membership services.

For all of these great achievements, I want to thank all of the approximately 1,000 volunteers who participated in PDA activities in 2012. This level of active participation is one of the things that is so unique about PDA—and makes me both humble and proud to serve as the Chairman of the Board of Directors. I also want to thank the staff for doing a great job serving all the members day in and day out. In 2012, we further enhanced the involvement of board members in a number of activities that were strategic and directional. Thank you for your work on these things. Finally, I would like to thank the outgoing Board members **Martin Van Trieste** and **Zena Kaufman** for their contributions through the years. I am excited about leading a diverse and dynamic Board of Directors this year.

So what should you expect in 2013? Expansion...and our continued focus on *People, Science and Regulation*!™

We are planning to release even more technical reports in 2013 than in 2012—at least ten. Our technical reports are written and peer-reviewed by world class experts; we only publish reports when they are of the highest quality standard and represent the most current technology/processes/regulations so that they can be used in daily work and as references by companies and health authorities. You have noticed that all technical reports are now available electronically through a portal on the PDA website. Access is free for members.

We are planning a number of great conferences this year, these include many signature meetings and co-sponsored events plus some new events like the *2013 PDA Human Factors and Human Error Reduction Workshop* and the *2013 PDA/FDA Improving Investigations Workshop.* I have always found these conference extremely useful technically and it is great to connect with industry and regulators.

At TRI we will continue to expand the number of aseptic and other course offerings. We are standardizing and continually improving the course content, building on feedback and new advances in science. Some of these courses are also offered as "in-company" training.

Based on request and interest we will continue our visits to companies to further improve how we serve our members interests. Our coverage of regulatory trends and news will continue and we are planning to further improve our services in this area as well.

We will establish at least one more chapter in 2013, further develop activities outside the United States, and we are currently expanding our staff to handle all these extra activities.

I am sure you share my excitement for 2013 in connecting people, science and regulation. I am looking forward to meeting you in PDA in 2013!

Happy New Year to all of you.

President's Message

PDA President Richard Johnson

2012 was another exciting year for PDA. It gives me great pleasure to share with you that 2012 was one of our best years so far. These many and varied activities were in alignment with the PDA 2010-2015 Strategic Plan and guided by your input and made possible through the efforts of hundreds of volunteers and our hardworking staff. I would like to highlight a few accomplishments:

- Developed and standardized core curriculum for 21 TRI courses
- Continued cooperative meetings with the FDA (6), PIC/S (3), the EMA and Japan's PMDA
- Established new chapters in India and Texas
- Developed a new process to improve the timeliness of technical reports and published a record number (9), including four technical reports from our PCMO℠ initiative
- Launched a technical report portal that, for the first time, gives members an ability to view all active technical reports as part of their member benefits
- Implemented a new computer database system to improve our interactions with members

PDA's primary focus is on people, as our members exhibited by contributing almost $15,000 to the American Red Cross' Hurricane Sandy relief fund.

2013 will be another year of continuing on our journey, and focusing on improving our services to our members worldwide. In accordance with our strategic plan, we can categorize these in into People, Science, Regulation and Business Management:

People

Focus on enhancing membership value by improving our outreach to members for volunteer opportunities and expanding our outreach to our international members.

Continue our signature meetings, such as the Annual Meeting, the *PDA FDA Joint Regulatory Conference*, the pre-filled syringes conference and the pharmaceutical microbiology conference. We are exploring other topics to help our community meet new challenges, such as human factors/human error reduction, advanced therapies, and improving internal investigations. Many of these conferences and workshops are covered elsewhere in this issue.

Expand and enhance our training activities in the United States and around the world with more than 75 courses.

Science

Continue our roll-out of the improved technical report development process, and deliver a record number of technical reports/surveys to our members in 2013, including *Technical Report 60: Process Validation: A Lifecycle Approach* and the 2011/2012 glass quality surveys.

Regulation

Expand our global reach and work effectively with global regulatory authorities to enhance pharmaceutical science and advance health of patients, by:

- Providing science and technology based input on regulations and guidelines related to PDA strategic areas
- Maintaining valuable and effective relationships with global regulators, and educating members on current expectations
- Engaging with regulatory agencies for the development and adoption of PDA technical reports.

Business Management

- Manage your Association's resources by updating our five-year rolling financial and marketing plan to sustain and balance major activities.
- Leverage staff and volunteer resources by aligning programs, technical reports and other PDA activities

2013 promises to be another busy year of *Connecting People, Science and Regulation*℠, but it all depends on the support and volunteer efforts that make these activities so valuable. If you would like to volunteer in a task force, interest group or a committee, visit www.pda.org/volunteer.

Please email us or stop by and let us know how we are doing. Remember, this is your Association. Our doors are always open, and we would love to hear from you.

Drug Shortages Provide Plenty of Material to Write About

The pharmaceutical industry is on a roll when it comes to drawing attention to itself in recent years...only the attention has not been good. Just when it seemed heightened public awareness of the serious health risks associated with poor drug quality--brought on by the heparin situation--was subsiding, along comes quality-related drug shortages.

The *PDA Letter* Editorial Committee (PLEC) asked us to cover this issue last summer, and a lot has happened since we put the topic on our editorial calendar. Who knew that following her scathing assessment of pharmaceutical quality in the *PDA Journal of Pharmaceutical Science and Technology* (May/June 2012:270-272), CDER's **Janet Woodcock** would target generic sterile injectable manufacturers for not focusing on drug quality for economic reasons in an article she coauthored in *Clinical Pharmacology & Therapeutics* (2013, 93:170-176)?

Rebecca Stauffer's coverage of the shortages and U.S. FDA's opinion received strong feedback from the PLEC members. Two committee members, **Karen Ginsbury** and **Tricia Griffiths,** responded with their own analyses of the situation. Both try to balance out FDA's viewpoint by pointing to the high cost of compliance. Yet another PLEC member felt onerous regulatory requirements, particularly with respect to manufacturing changes, play a role in disincentivising manufacturers from making facility upgrades, but he was unable to provide an article at this time. Rebecca did balance out her coverage by interviewing Hospira VP **Marty Nealey,** who will be discussing his firm's plans to remediate manufacturing issues at the upcoming PDA Annual Meeting. I reached out to interview former PDA Director **Martin VanTrieste** to get his thoughts on the situation, but we were unable to set a time. We hope to provide his response in a later issue. Martin is also speaking in the same session as Nealey in April.

Rebecca and **Katja Yount** did a nice job putting together the issue's infographic, "Drug Shortages in the United State: A Snapshot."

The March issue is the PDA Annual Meeting "Show Issue," so readers can learn all about PDA's 67th Annual Meeting being held in Orlando this April. I want to thank all the exhibitors who agreed to run ads in this special edition!

Next month: Process Validation.

PDA Letter

The PDA Letter is published 10 times per year, exclusively for PDA members.

Subscriptions are not available.

PDA Global Headquarters — Bethesda Towers

4350 East West Hwy., Suite 200
Bethesda, MD 20814 USA
Tel: +1 (301) 656-5900 Fax: +1 (301) 986-0296
info@pda.org
www.pda.org

PDA Europe — Adalbertstr. 9

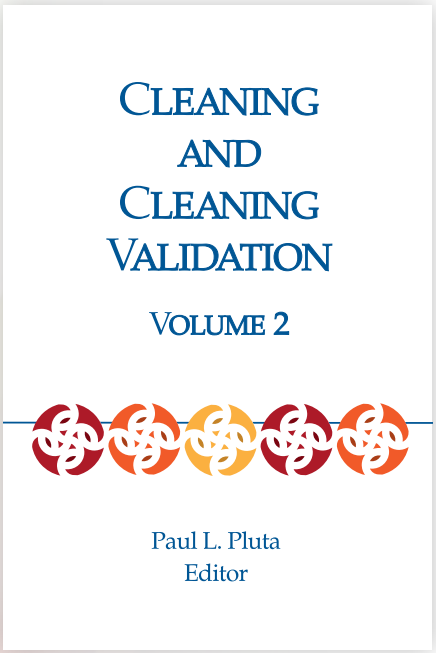
16548 Glienicke/Berlin Germany
Tel: +49 33056 23 770 Fax: +49 33056 23 7777
petzholdt@pda.org

PDA Training & Research Institute

4350 East West Hwy., Suite 150
Bethesda, MD 20814 USA
Tel: +1 (301) 656-5900 Fax: +1 (240) 482-1659
info-tri@pda.org

Books on Sale at the 2013 PDA Annual Meeting

April 15-17, 2013 | The Peabody Orlando | Orlando, Florida
www.pdaannualmeeting.org



Cleaning and Cleaning Validation, Volume 2
Edited by Paul L. Pluta, PhD

Cleaning and Cleaning Validation, Volume 2, edited by **Paul L. Pluta,** PhD, contains current knowledge and approaches to cleaning and cleaning validation of pharmaceuticals, medical devices and associated products. Information provided is consistent with current regulatory documents and expectations. Practical information and case studies presented throughout the volumes will supplement the basic information with useful experiences.

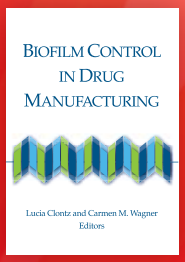
Volume two, "Application of Basics and Principles," builds on the foundation of concepts provided in volume one. Twenty-five chapters address the lifecycle approach to cleaning validation; discussion of specific process residues and their cleaning; equipment, including equipment to be cleaned and cleaning equipment; and, much much more!

20% pre-ordering discount through April 30th!

Member ~~Price $335~~ Sale Price: $268 | Nonmember ~~Price $419~~ Sale Price: $336

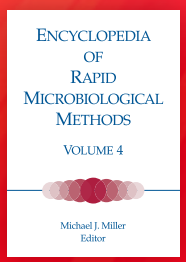
www.pda.org/cleaningval2

Books on sale at the 2013 PDA Annual Meeting



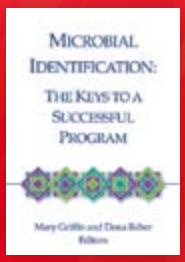
Biofilm Control in Drug Manufacturing
Edited by
Lucia Clontz and Carmen Wagner
Item No. 17306

Price (15% Off)
Member ~~$240~~ Sale Price: $204
Nonmember ~~$299~~ Sale Price: $255



Encyclopedia of Rapid Microbiological Methods, Volume 4
Edited by
Michael J. Miller, PhD
Item No. 17308

Price (15% Off)
Member ~~$335~~ Sale Price: $285
Nonmember ~~$419~~ Sale Price: $357



Microbial Identification: The Keys to a Successful Program
Edited by
Mary Griffin and Dona Reber
Item No. 17307

Price (15% Off)
Member ~~$240~~ Sale Price: $204
Nonmember ~~$299~~ Sale Price: $255

www.pda.org/bookstore | Tel: +1 (301) 656-5900 | Fax: +1 (301) 986-1361

Revolution inside

VITEK MS™

When routine becomes extraordinary

www.biomerieux-industry.com/ms

BIOMÉRIEUX INDUSTRY