



ISPE Engineering Regulatory Compliance Conference  
Arlington, Virginia, USA

E06: Selected Topics in Critical Utilities – Water, Steam, and Gases  
Wednesday, 4 June 2008 (09.00-17.00) and Thursday, 5 June (08.00-16.00)

**Wednesday, 4 June**

07.30-09.00	Breakfast in Exhibit Hall
09.00-9.15	Welcome and Introduction to Critical Utilities COP (A. Collentro)
	<b>Case Studies and Hot topics</b>
09.15-10.00	<p><b>Methods of Production for Water for Injection</b> (Zoccolante)</p> <p>USP allows water for injection (WFI) to be produced by “distillation or purification process proven to be equal or superior to distillation.” Various production methods will be reviewed and advantages and disadvantages will be discussed and case studies will be presented. Key elements of the discussion include:</p> <p>A review of still types and pretreatment requirements</p> <ul style="list-style-type: none"> <li>• History of reverse osmosis use for WFI production</li> <li>• History of ultrafiltration for production of WFI quality water</li> <li>• Membrane system configurations</li> <li>• Economic considerations</li> <li>• Global Regulatory Requirements</li> </ul>
10.00-10.30	Networking Break in Exhibit Hall
10.30-11.15	<p><b>Case Studies on the use of Ozone in Pharmaceutical Applications</b> (W. Collentro)</p> <p>Ozone, generated in the gaseous or dissolved state, is used for microbial control in USP Purified Water Systems. Multiple Case Histories will be presented discussing ozone generation, introduction, out-gassing, and destruction techniques. A discussion of dissolved ozone operating levels, sanitization levels, and monitoring techniques will be included. Data to support distribution loop sanitization frequency and duration will be presented as well as case histories on potential concerns of ozone usage including oxidation of organic material, generation of by-products, and rouging of stainless steel storage tanks. Operating data for each Case History will be analyzed, demonstrating the effect of system design and operation on indicated parameters.</p>
11.15-12.00	<b>Compressed Air</b> (DePaul)
12.00-13.00	Lunch
13.00-13.45	<p><b>Pretreatment for Pharmaceutical Water Systems</b> (Holland)</p> <p>Proper selection of pretreatment is a critical first step in developing a robust design for a Pharmaceutical Purified Water System. The selection criteria for determining what pretreatment components are necessary, including the importance of incoming water chemistry and the impact on desired final product water quality, will be reviewed. The principles of design and operation of various pretreatment options, and the recommended maintenance requirements are discussed. USP and FDA compliance, materials of construction, and other issues specific to pharmaceutical water generation systems will also be covered.</p>

13.45-14.45	<p><b>Is Rouge Really a Problem? A Science-Based Approach to Clean Steam and WFI System Maintenance</b> (Petrillo, Vogel)</p> <p>This presentation will focus on a novel methodology for monitoring USP Clean Steam and WFI systems for the presence of rouge and its precursors. The discussion will focus on the application of such monitoring data toward a goal of establishing a science-based approach to system maintenance. Existing time-based practices avoid current PAT initiatives and often result in inappropriate maintenance intervals. Specific case study examples will be detailed to illustrate the extraordinary clarity with which such systems can be routinely monitored.</p>
14.45-15.15	Networking Break in Exhibit Hall
15.15-16.15	<p><b>Rapid Microbial Methods (RMM) Related to Pharma Water</b> (Sutton)</p> <p>This presentation will review the role microbiology plays in water quality, especially from a risk perspective. Unfortunately no water system can remain sterile, and the ecosystem established in your water loop will affect the quality of the water in that loop. In addition to looking at the microbiology of the system, this presentation will also discuss regulatory recommendations from the US and EU. Finally, special topics in water microbiology will be discussed including the inevitable role of biofilm in your system and the significance of organisms that might be present but are not measureable by traditional methodologies. The second half of the presentation will be devoted to rapid/alternate methods of interest.</p>
16.15-17.00	<b>Open Discussion on Hot Topics</b> (Bevilacqua, Severson)
17.00	Seminar Adjourns for the Day, Reception

**Thursday, 5 June (Note that this day starts and ends earlier!)**

07.00-08.00	Breakfast
	<p><b>Open Forum – Key Elements and Participant Input to the Guide</b></p> <ul style="list-style-type: none"> <li>• Water Guide short description</li> <li>• Gas Guide short description</li> </ul>
08.00-8.10	Welcome and Introduction (Larrabee, Roe)
08.10-08.30	<p><b>Introduction to Water and Steam Baseline Guide</b> (Roe)</p> <p>ISPE is proceeding with the review and update of the existing Baseline Guide Volume 4: Water and Steam Systems. This presentation will provide a progress report on this effort. This session will provide a quick review of the history of this guide, the current status of the update, and the plan forward. Guide Team Chapter Leaders will summarize current activities. At the conclusion of this update, an open discussion will solicit ideas and address questions.</p>
08.30-09.15	<p><b>Process Gases: From Manufacturing to End Use</b> (Akerlindh, Van der Steen)</p> <p>The Gas Guide will address the use of process gases in the pharmaceutical industry. In this session, we will discuss process gases, excluding compressed air, as it is only described briefly in the current guidelines from FDA, EMEA, ICH, PIC/S and ISPE. The challenges we face in the pharmaceutical industry are specifying gas quality, management of quality documentation and assuring that gas quality is not compromised in the delivery chain. Participants will gain knowledge on manufacturing of process gases, methods to demonstrate gas quality compliance at user site and background on regulatory requirements.</p>

09.15-10.00	<b>Chapters 4, 5, 6</b> (Zoccolante) <ul style="list-style-type: none"> <li>• Chapter 4 -- Pretreatment</li> <li>• Chapter 5 -- Final Treatment: Non-Compendial &amp; Compendial Purified Water</li> <li>• Chapter 6 -- Final Treatment: Water-for-Injection</li> </ul>
10.00-10.30	Networking Break
10.30-11.30	<b>Chapters 9, 10</b> (Gonzalez) <ul style="list-style-type: none"> <li>• Chapter 9 -- Laboratory Water (new chapter)</li> <li>• Chapter 10 -- Rouge (new chapter)</li> </ul>
11.30-12.00	<b>Chapter 13</b> (Roe) <ul style="list-style-type: none"> <li>• Chapter 13 – Microbiological Considerations (new chapter)</li> </ul>
12.00-13.00	Lunch
13.00-13.45	<b>Gas Systems Designed for Impact, Risk-based Assessment</b> (Larkin)
13.45-14.30	<b>Chapters 7, 8</b> (Sipe) <ul style="list-style-type: none"> <li>• Chapter 7 -- Pharmaceutical Steam</li> <li>• Chapter 8 -- Storage and Distribution Systems</li> </ul>
14.30-15.00	Networking Break
15.00-16.00	<b>Open Discussion on W&amp;S Hot Topics and Closing Remarks</b> (Larrabee, Roe)
16.00	Seminar Adjourns