

22nd Annual Produced Water Seminar 2012

**Houston, Texas, USA
17-19 January 2012**

ISBN: 978-1-62276-026-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2012) by the Produced Water Society
All rights reserved.

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact the Produced Water Society
at the address below.

Produced Water Society
15906 Heatherdale Drive
Houston, TX 77059

Phone: (281) 480-3087
Fax: (281) 728-8980

cctyrie@comcast.net

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Incorporating the Most Valuable Resource to Improve NPDES Compliance	1
<i>Johnny Richard</i>	
Novel Ion-Exchange System Softens Produced Water for Steam Generation	21
<i>Mike Dejak, Keith Jones, George DiFalco</i>	
Innovations in Produced Water Treatment	33
<i>Chris Catalanotto</i>	
On-Site Field Analysis of Hydraulic Fracturing Flowback and Produced Waters	50
<i>Johnny Robinson</i>	
Membrane Technology Pretreatment	55
<i>Peter Cartwright</i>	
How to Design Chemical and Equipment Trials	69
<i>Ron Bosch, Gayathri Ariaratnam</i>	
Disclosure of the Chemicals Used in Frac Fluids – What is Going On?	77
<i>John Veil</i>	
Penetration of Water Droplets Through Thin Hydrophobic Coating by Electrowetting	91
<i>Abdulwahab Aljuhani, George Chase</i>	
Seawater Regeneration of PUROLITE® SST80™ Shallow Shell SAC Resin	103
<i>Don Downey</i>	
Factors Involved in Substituting Salt Water for Fresh in Fracturing	113
<i>George King</i>	
Technological Surveillance Report: Produced Water Treatment Technologies	124
<i>Jorge L. Chavarro</i>	
Use of In-Line, Uni-Axial, Compact Separation Technology for Removal of Bulk Water from Crude and Suspended Solids from Oil-Water	138
<i>Tom Vogt, Carl Wordsworth, Najam Beg, Sacha Sarshar</i>	
In-Situ, Real-Time, Self Cleaning, Membrane Inlet Mass Spectrometry for Water Analysis	158
<i>Khalid Thabeth</i>	
Revolift™ VS - A Mobile and Modular Gas Flotation Technology	175
<i>Jacob Denis, Douglas W. Lee, Todd Kirk</i>	
Onsite Treatment of the Flow Back and Produced Waters	197
<i>Thomas Steinke, Billy Emmers, Christopher Cothren</i>	
Is it Me, Or We Getting Hotter (or Cooler)? - Living with the New Green House Gas Regulations	N/A
<i>Rachel Pappworth</i>	
U.S. Regulatory and Permitting Developments for Produced Water	208
<i>Scott Wilson</i>	
Updates on Full Scale Systems and Pilot Evaluations Using the MYCELX Clean Water Process	213
<i>Lance Rodeman</i>	
Water Treatment Fundamentals: The Dirty Dozen Revisited (12 Common Contributors to Water Treatment Problems)	221
<i>Ted Frankiewicz</i>	
Produced Water, A New Resource of Fresh Water	235
<i>Jorge L. Chavarro</i>	
Update on the Osorb® Solubles Removal Systems and the Correlating Data Gathered	257
<i>Paul Edmiston, Jay Keener</i>	
A New Product Selection Process to Minimize Water Quality Impact of Production Chemicals Through Product Development – LDHI Case Study	272
<i>Peter G. Conrad, Gary L. Melancon, Peter A. Webber, David Lewis, Gavin Meikle, John Nicholas</i>	
Marcellus Shale Overview, Naturally Occurring Radioactive Materials ("NORM") in Wastewater Generated from Oil and Gas Production	282
<i>Arlette Ruiz</i>	
Compact Offshore De-Aeration of Seawater: Performance and Endurance - Testing in a Pilot Plant	310
<i>Andreas Matzakos, Remi Van Compernelle, Flor Aguilar</i>	
High Density Polyethylene (HDPE) Lined Produced/Flow Back Water Evaporation Ponds	341
<i>Neal Nowak</i>	
Detection of Oil Field Chemicals in Seawater Using a Fluorescence Measurement Technique	358
<i>Frank Richerand Jr., Gerard Cooke, Christopher Richerand</i>	
Trends in Flowback Water Management in Shale Gas Plays	367
<i>John Veil</i>	

Challenges Associated with Produced Water Re-Injection for Offshore Waterflood Projects	389
<i>Lee Jordan</i>	
Correlation of ONLINE & Lab Measurement of Produced Water	390
<i>Tod Canty</i>	
Microbial Management to Improve Obw Discharge, H₂O Injection and H₂O Reuse	397
<i>Johnny Richard</i>	
Treatment and Reuse of Coalbed Methane Produced Water Using a Pervaporation Irrigation Membrane Process	417
<i>Emily Jane Huth, Lindsay Todman, Michael Templeton, Jonathan Brant</i>	
“No-Solvent” Oil-in-Water Analysis: A Robust Alternative to Conventional Solvent Extraction Methods	429
<i>Gary Bartman, Dale F. Frost, Amy E. Foster, Michael Holmes</i>	
WSO Removal Through Advanced Coalescing	450
<i>Jarid Hugonin</i>	
Author Index	