

American Institute of Chemical Engineers

39th Annual Loss Prevention
Symposium
2005

Held at the 2005 AIChE Spring National Meeting

April 10-14, 2005
Atlanta, Georgia, USA

Printed from e-media with permission by:

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

ISBN: 978-1-60423-458-9

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

American Institute of Chemical Engineers

39th Annual Loss Prevention Symposium
2005

TABLE OF CONTENTS

SESSION LPS-1

INSERTING OF REACTORS AND PROCESS EQUIPMENT

Inerting, a Reliable and Effective Preventive Measure Against Explosions	1
<i>T. Hoppe and N. Jaeger</i>	
Using Limiting Air Pressure (LAP) as an Alternative to Inertion in Rotary Dryers	26
<i>M. Toth, D. Muzzio, and L. Cunningham</i>	
Loss of Inerting Due to Multiple Exhaust Vents	33
<i>J. K. Thomas, D. E. Ketchum, and Q. A. Baker</i>	
Inerting of Centrifuges for Safe Operation	50
<i>S. S. Grossel</i>	

SESSION LPS-2

CHEMICAL REACTIVITY HAZARDS

Missed Opportunities in Reactive Chemical Hazard Evaluations	63
<i>R. A. Ogle, D. R. Morrison, III, A. R. Carpenter, and Y. S. Su</i>	
Rapid Reactivity Screening Using a Nanocalorimeter	74
<i>Y-S Liu, S. R. Saraf, V. M. Ugaz, W. J. Rogers, and M. S. Mannan</i>	
Reactivity Investigation of Mixtures of Propane and Nitrous Oxide	83
<i>R. J. Willey, S. Hu, and J. M. Moses</i>	
Chemical Reactivity Hazards and Inherently Safer Technology	96
<i>B. Venugopal and D. Y. Kohn</i>	
Rapid Identification of Reactivity Hazards in a Multi-Use Facility	104
<i>D. J. Leggett</i>	
Panel Discussion on Chemical Reactivity Hazards Issues	119
<i>R. Johnson, B. Dunbobbin</i>	

SESSION LPS-3

FIRE AND EXPLOSIONS

Fire and Explosions in the Manufacturing Industry: Data from the Hazardous Substances Emergency Events Surveillance (HSEES), 1996-2001	121
<i>Z. Berkowitz, D.K. Horton, and W. E. Kaye</i>	
Prediction of Minimum Flash Point Behavior for Binary Mixtures	133
<i>M. Vidal, W. J. Rogers, and M. S. Mannan</i>	
Buoyant Gas Layer Deflagration Effects	154
<i>R. Zalosh and J. Stern-Gottfried</i>	

BLEVE blast by expansion-controlled evaporation	172
<i>A. C. van den Berg, M. M. van der Voort, J. Weerheijm, and N. H. A. Versloot</i>	
Modeling the Consequences of Bursting Vessels Inside Enclosed Structures using Wall Failure Criteria	188
<i>D. D. Herrmann</i>	
Design Considerations in Dust Explosion Inerting and Suppression	207
<i>A. G. Dastidar, J. E. Going, F. I. Khan, and P. R. Amyotte</i>	
Barrier Spacing to Prevent Explosion Propagation in Ducts	234
<i>J. Senecal and H. Garzia</i>	

SESSION LPS-4

PROCESS HAZARDS IN THE PHARMACEUTICAL INDUSTRY

Containment of Potent Pharmaceutical Compounds: A Risk Based	247
<i>B. D. Moore</i>	
Low Temperature Oxidation of Methanol in the Presence of Sponge Nickel Leads to Filter Overpressure Incident	264
<i>E. M. Davis</i>	
A Method to Determine if a Flowing Suspension Might Cause Electrostatic Damage to the Glass/TFE Liner of Steel Equipment	274
<i>D. Muzzio and M. Toth</i>	
A Safe and Practical Procedure to Prepare Ethyl Diazoacetate	283
<i>S. S. Y. Wang, A. S. Kotnis, J. H. Simpson, W. Merkl, D. Domina, and S. Kiang</i>	
Pfizer's Global Approach for Reducing Risks for Hydrogenation Operations	291
<i>C. Karayigitoglu and J. Holroyde</i>	
Effectively Managing Change in Pharmaceutical Processes	300
<i>S. Thornton</i>	

SESSION LPS-5

DUST EXPLOSIONS

Back To The Basics In Dust Explosions	307
<i>D. C. Kirby</i>	
Dust Explosion Scenarios and Assessments in the New CCPS Guidelines for Safe Handling of Powders and Bulk Solids	319
<i>R. Zalosh, S. Grossel, R. Kahn, and D. Sliva</i>	
Investigation into a Dust Explosion at an Automotive Insulation Supply Facility in Corbin Kentucky	334
<i>William Hoyle, Giby Joseph, Mark Kaszniak, Stephen J. Wallace</i>	
Evaluation Of Dust And Hybrid Explosion Potential In Process Plants	343
<i>A. Dastidar and C. Dahn</i>	
Dust Explosion Venting through Ducts	352
<i>E. A. Ural</i>	
Combustible Dust Hazard Study	387
<i>A. Blair</i>	
Discussion on Dust Hazard Study	389
<i>A. Blair</i>	

SESSION LPS-6
CASE HISTORIES AND LESSONS LEARNED

Insidious Explosion Hazards in the Mining Industry 390
D. M. Tjernlund and S. J. Luzik

Two Large Losses: Refinery Fire and Vapor Cloud Explosion at a Natural Gas Processing Plant 410
J. Yuill

U.S. Chemical Safety Board Investigation: Positive Pressure Control Room Failure..... 428
L. Long, J. Banks, M. Morris, J. Murphy, and S. Wallace

The 27 March 2003 Billy-Berclau Accident - A Technical and Organisational Investigation 435
J-C Lecoze, N. Dechy, S. Lim, E. Leprette, and R. Branka

Handling Chemicals in Small Containers 464
A. Ness and R. Gibson

When Risk Becomes Reality: Formosa Plastics™ Response to a Plant Explosion. 472
R. Thibault

AUTHOR INDEX