International Symposium on Safety Science and Engineering in China 2012

Beijing, China
7-9 November 2012

Editors:
Kang Jiang

ISSN: 1877-7058
Some format issues inherent in the e-media version may also appear in this print version.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>1</td>
</tr>
<tr>
<td>COM Encapsulation Techniques of Ventilation Network Solution</td>
<td>3</td>
</tr>
<tr>
<td>Research on Activity Characteristics on Composite Cementitious Materials Based on Phosphogypsum</td>
<td>9</td>
</tr>
<tr>
<td>Reform and Practice of the Graduation Practice in Safety Engineering</td>
<td>16</td>
</tr>
<tr>
<td>Accident Cause Analysis and Evacuation Countermeasures on the High-Rise Building Fires</td>
<td>23</td>
</tr>
<tr>
<td>The Educational Research of the Elevator Safety Warning Pictures for the Young Children</td>
<td>28</td>
</tr>
<tr>
<td>Evaluation of Safe Mining on Confined Water of No. I1 Coal in Micun Coal Mine</td>
<td>34</td>
</tr>
<tr>
<td>Research on the First International Safe Community Building in Mainland China</td>
<td>39</td>
</tr>
<tr>
<td>Research and Development of Solid-Gas Coupling Physical Simulation Experimental Platform and Its Application</td>
<td>47</td>
</tr>
<tr>
<td>Technology Research on Bio-Hydrogen Production</td>
<td>53</td>
</tr>
<tr>
<td>Decision Support for Urban Shelter Locations Based on Covering Model</td>
<td>59</td>
</tr>
<tr>
<td>Study on Thermal Decomposition and Kinetics of Timber Used in Houses on Stilts under Air Atmosphere</td>
<td>65</td>
</tr>
<tr>
<td>Association Analysis of Emergency Rescue and Accident Prevention in Coal Mine</td>
<td>71</td>
</tr>
<tr>
<td>Occupational Injury Occurrence and Related Risk Factors among Chinese Migrant Workers</td>
<td>76</td>
</tr>
<tr>
<td>Division of Spontaneous Combustion “Three-Zone” in Goaf of Fully Mechanized Coal Face with Big Dip and Hard Roof</td>
<td>82</td>
</tr>
<tr>
<td>Prediction of Coal Spontaneous Combustion in Goaf Based on the BP Neural Network</td>
<td>88</td>
</tr>
<tr>
<td>Analysis and Prevention of Bombing Risks in Iraq Projects Performed by Chinese Enterprises</td>
<td>93</td>
</tr>
<tr>
<td>Failure Assessment Research of Flawed Ductile Metals Used in Nuclear Plant</td>
<td>101</td>
</tr>
<tr>
<td>Establishment of Emergency Management System Based on the Theory of Risk Management</td>
<td>108</td>
</tr>
<tr>
<td>The Application of Benchmarking Management on Safe Community</td>
<td>113</td>
</tr>
<tr>
<td>Defining the Safety Integrity Level of Public Safety Monitoring System Based on the Optimized Three-dimension Risk Matrix</td>
<td>119</td>
</tr>
<tr>
<td>Air Flow through the Door Opening Induced by a Room Fire under Different Ventilation Factors</td>
<td>125</td>
</tr>
<tr>
<td>Forecasting of Production Safety Situation by Combination Model</td>
<td>132</td>
</tr>
<tr>
<td>Fuzzy-Entropy Theory Comprehensive Evaluation Method and Its Application in Building Construction Safety</td>
<td>137</td>
</tr>
<tr>
<td>Comprehensive Evaluation on Occupational Hazards for Steel Rolling Workshops with the Interactive Effects of Multiple Hazards</td>
<td>143</td>
</tr>
</tbody>
</table>
Reliability Analysis of Main Steam Pipe Containing Defects  .......................................................... 150
Youchen Zhang, Zongbo Jiang

The Intrinsinc Safety Engineering Design Method for the Petrochemical Plant ............................. 156
Feng Wang, Yajun Chen, Haochen Wang, Cunyin Chen, Bin Shi

Prediction of Safety Objective of an Enterprise Using Fuzzy Neural Network .......................... 162
Hui Liu, Yunfei Hu, En Zhou, Kai Shao

An Extension Evaluation Model for Building Safety under the Influence of Blasting Seismic ...... 168
Song Ren, Yue-Ming Bai, De-Yi Jiang, Yu Li An

Motivation Mechanism of Accident Prevention in Coal Mine ....................................................... 174
Ying Liu, Zhijia Hua, Lianhao Lei

The International Operation Security Risks and Preventive Measures of Chinese Company ....... 180
Tao Cui, Yanyan Wang, Jianchun Fan

Comprehensive Control of the Noise Occupational Hazard in Cement Plant ............................... 186
Canfeng Zhang, Shujie Yuan, Dong Li

Precursor of Thermal Power Disaster in High-Efficiency Intensifying Coal Mine and Its Early-Warning .............................................................. 191
Lianjiang Wei, Wendong Li, Jianwei Wang, Lingyun Du

Safety Entropy Research of Working Environment Parameters in Plateau Non-coal Underground Mine ................................................................. 197
Jie Liu, Peng Yang, Wensheng Lv

A QSAR Study of the Acute Toxicity of Halogenated Phenols ...................................................... 204
Guangyu He, Linlin Feng, Haiku Chen

The Confirmation of Tort Liability in Universities —From the Perspective of Security Obligations .. 210
Zhaoqi Fu

Study on Safety Management of the Temporary Community after the Earthquake ....................... 214
Hui Lv

Experimental Research on Carbon Dioxide Inhibiting the Process of Coal-Oxygen Adsorption .. 221
Yu-Kun Gao, Ying-Hua Zhang, Zhi-An Huang, Chun-Li Hu, Men-Yu Huang

Safety Evaluation on Slope of Saindak Open-pit Mine ................................................................. 226
Zhian Huang, Guangjun Zhao, Yinghua Zhang, Yukun Gao, Yanfeng Zhang

Discussion on Application of IOT Technology in Coal Mine Safety Supervision ....................... 233
Yinghua Zhang, Guanghua Fu, Zhigang Zhao, Zhan Huang, Hongchen Li, Jixing Yang

Airport Safety Risk Evaluation Based on Modification of Quantitative Safety Management Model 238
Xianfeng Lu, Shengguo Huang

Study on the Basic Problems of Safety Culture ............................................................................. 245
Ahong He, Sarui Xu, Guif Fa

Application of Data Mining Techniques in the Analysis of Fire Incidents .................................... 250
Dake Zhang, Kang Jiang

An Experimental Study on the Burning Behavior of Fabric used Indoor ...................................... 257
Pei Bei, Chen Liwei, Lu Chang

Dynamic Security Decision-making Process ................................................................................. 262
Shuangye Liu, Juan Wang, Lina Chen, Dan Wang, Fei Jiang

Optimization of Goaf Gas Drainage Parameters Based on Numerical Simulation Studying Fracture in Overlying Strata ......................................................... 269
Tian-Xuan Hao, Zhi-Chao Jin, Feng Li

Numerical Simulation Study on Sprinkler Control Effect in UBS Fuel Tank Room of Nuclear Power Plants ................................................................. 276
Qiang Shi, Rongyi Ma, Juan Li, Jiaxiu Zuo, Chunming Zhang, Jianshe Chai

Life Cycle Oriented Hazards Identification for Tailings Facility ................................................... 282
Liangyong Tang, Zhongxue Li, Yiqing Zhao, Jiexuan Qin, Luyao Lin

Jingdong Zhang, Han Zuo

Hazard Characteristics from Gas Explosion in Underground Constructions ................................ 293
Lei Pang, Jialei Tian, Wei Yao, Yabo Xu

Introduction of Burn-up Credit in Nuclear Criticality Safety Analysis ....................................... 297
Guoshun You, Chunming Zhang, Xinyi Pan

Study of RF Coil in NQR Explosive Detection System ............................................................... 302
Fenglong Hao, Gengguang Xu, Xueyi Huang

Design of an Intelligent Temperature Control System Based on the Fuzzy Self-Tuning PID ........ 307
Wei Jiang, Xuchu Jiang
Thermal Decomposition Analysis and Safety Study on Di-tert-butyl Peroxide .............................................................. 312
Jiayu Lv, Wanghua Chen, Liping Chen, Yingtao Tian, Xin Sun

The Performance-Based Fire Protection in the Nuclear Power Plant Design ............................................................... 318
Jiaxu Zou, Qiang Shi, Juan Li, Zhivei Fu, Wei Song, Jiayun Chen, Chunming Zhang, Jianshe Chai

Advanced Predication of Geological Anomaly Body Ahead of Lanesway Using Seismic Tomography Technique ............................................................... 324
Jianlong Shang, Xianwei Luo, Feng Guo, Jianhua Hu, Keping Zhou

The Development of a New Safety Culture Evaluation Index System ............................................................... 331
Lei Wang, Ruishan Sun

Experimental Investigation on Inerting Mechanism of Dust Explosion ............................................................... 338
Bing Du, Weixing Huang, Niansheng Kuai, Jingjie Yuan, Zongshan Li, Yuan Gao

An Extensive Discussion on Experimental Test of Dust Minimum Explosible Concentration ............................................................... 343
Jingjie Yuan, Weixing Huang, Bing Du, Niansheng Kuai, Zongshan Li, Jingyi Tan

Determination of Fire Fused Traces Caused by Automotive Electrical Wiring Harness Using Metallographic Method ............................................................... 348
Guozhong Huang, Siheng Sun, Haichao Bu, Fei Ji

Studies on Emergency Logistics Operation Model for Unexpected Events at Yangtze Chemical Industrial Park ............................................................... 353
Xinying Wang, Haiqun Chen, Kaizkan Wang

Management System of Hidden Trouble Information ............................................................... 359
Xingdong Li, Chengchong Liu

Toward Slip and Fall Prevention: Exploring the Guidance and Challenges of Anti-slip Footwear ............................................................... 364
Steve Chen, Janet Jin, Eva Lou

Study on Safety Assessment of Fire Hazard for the Construction Site ............................................................... 369
Hui Liu, Yongqiang Wang, Shimei Sun, Baotie Sun

Design Feature Analysis and Pilot Ergonomic Evaluation for Protective Fire Gear ............................................................... 374
Constance Luo, Janet Jin

Developments in Emergency Industry and Industrialization in China ............................................................... 379
Man Fang, Hongyan Yang

A New Type of Automatic Monitoring System of Static and Dynamic Displacement on Dam and Slope ............................................................... 387
Yajun Zhao, Qian Qian

Study on Principle of Product Defect Identification ............................................................... 393
Xuili Lin, Baozhong Chen, Hanqing Xie

Analysis of Performance-based Fire Safety Evacuation in a College Library ............................................................... 399
Chixiang Ma, Baotie Sun, Shimei Sun, Hui Liu

Study on Exposure Assessment Model of Dioxane in Shampoo ............................................................... 407
Guozhong Huang, Haichao Bu, Siheng Sun, Aiji Chen, Yang Zhou

The Risk Assessment Method of Lighting Disaster on Railway Signal System ............................................................... 413
Ruifang Mou

Post Signal Processing of Ultrasonic Phased Array Inspection Data for Non-destructive Testing ............................................................... 419
Kun Xiao, Qiang Wang, Dong Hu

The Applied Research of Fuzzy Comprehensive Evaluation on Talent Training Mode of Safety Engineering ............................................................... 425
Fuchuan Jiang, Qiang Zheng, Wenwen Shi

Application of Simulink Simulation for Theoretical Investigation of Nonlinear Variation of Airflow in Ventilation Network ............................................................... 431
Hongqing Zhu, Zeyang Song, Yuzhe Hao, Shiliang Feng

Safety Analysis Approach of MFM-HAZOP and Its Application in the Dehydration System of Oilfield United Station ............................................................... 437
Mingda Wang, Guoming Chen, Jianmin Fu, Weijun Li

Research on Beijing Bus Driver Psychology Fatigue Evaluation ............................................................... 443
Yao Sang, Jie Li

Research on the TNT Equivalence of Aluminized Explosive ............................................................... 449
Ning He, Yude Liu, Hongpeng Zhang, Chunpeng Li

Research on Intrinsic Safety Method for Open-pit Mining ............................................................... 453
Kaihuang Zheng, Fuchuan Jiang

Ultrasonic Phased Array for the Circumferential Welds Safety Inspection of Urea Reactor ............................................................... 459
Dong Hu, Qiang Wang, Kun Xiao, Yehao Ma

Review of Recent Researches on Occupational Health Assessment in China ............................................................... 464
Minyan Li, Dejin Huang, Mao Liu
CFD Simulation of Temperature Field Distribution of the Liquefied Hydrocarbon Spherical Tank
Xiaodong Ling, Zhongsha Han, Wenyi Dang, Anfeng Yu, Peng Wang
Leaking .................................................................................................................. 472
Field Test Research on Two-dimensional Gas Concentration and Temperature Distribution in the
Goaf of Fully Mechanized Caving Face ................................................................. 478
Gang Wang, Weimin Cheng, Jun Xie
Investigation and Pondering of Dust and Poison Hazards in 44 Small Wooden Furniture Enterprises ....... 484
Yan Qin, Tong Wang, Ya Chen, Yingjie Liu
The European Emerging Risk Radar Initiative – A Chance for China? ......................... 489
Aleksandar Jovanovic, Daniel Balox, Liu Yan
Research and Application on Risk Assessment DEA Model of Crowd Crushing and Trampling
Accidents in Subway Stations .................................................................................. 494
Yan Liu, Tong Wang, Hui Ding, Zongzhi Wu
Research on Safety Supervision Model of Shanxi Group Coal Enterprises ..................... 499
Lidong Niu, Kai Wang
Discipline Construction and Knowledge System of “Safety Science and Engineering” .............. 506
Haiying Mao
Discussion on Harmony Value and Construction Way of Safe Community ..................... 512
Lianfeng Xu, Yongchuan Wu, Xinkui Liu
Research on Protection Measures and Explosion about Aluminum Dust .......................... 516
Maoling Li
Avalanche Dynamics in Co-evolutionary Megalopolis Communities' Networks.................. 519
Wei Li
Safety Responsibilities for Owner and Example in Public Works .................................. 523
Chunxiang Wang
Behavior Based Safety for Accidents Prevention and Positive Study in China Construction Project .... 528
Daowei Chen, Hantzi Tian
Study on the Strategies for Developing a Safety Culture in Industrial Organizations ........... 535
Guorong Shi, Inoue Shichiro
Open Press Electrical Accident Risk Assessment based on Bayesian Network .................. 542
Wenyong Chen, Yingtian Niu
Research on the Fish Behavior Simulation based on Swarm Intelligence ....................... 547
Jun Ma
Preparation and Characterization of Fire Retardant Methyl Vinyl Silicone Rubber Based Cable
Covering Materials ................................................................................................. 552
Linqing Yang
Research about the Level of Operational State of OHSMS in a Group Company .................. 556
Qing Chen, Siran Liu
Method of Safety Assessment for Airport Baggage Conveyer Belt .................................. 561
Qing Wang, Haitian Jiu
First Responsibility Person for Enterprise Safety: Transition from “Employer” to “Business
Owner”——Starting Point for Stipulation of Industrial Safety and Health Law in Japan ........ 565
Xiaohong Guo
Simulation Study on Value of Cable Fire in the Cable Tunnel ........................................ 569
Yingtian Niu, Wenting Li
Comparison and Analysis of Institutionalization, Standardization and Normalization of Enterprise
Safety Production .................................................................................................... 574
Yongyi Wang, Yan Zhang
Common Problems and Countermeasures in Work Safety Standardization Process in Beijing .... 578
Zhumin Liu
Research on Working Face of Residual Coal Self-Ignition Characteristics and Early Warning
Technology ........................................................................................................... 582
Zhongpeng Xie
Distribution Law of High Temperature Mine’s Thermal Environment Parameters and Study of Heat
Damage's Causes .................................................................................................... 588
Zhongpeng Xie
Analysis of Coated-after Superheater Pipe Bursting Accident in Utility Boiler .................. 594
Zhong Yue
The Security Risk Assessment Methodology ................................................................ 600
Chunlin Liu, Chong-Kuan Tan, Yea-Saen Fang, Tat-Seng Lok
The Trend and Issues of Occupational Safety and Health in Japan .................................. 610
Masahiro Hori
Several Issues about Urbanization and Urban Safety .......................................................... 615

Jie Li, Qian Liu, Yao Sang

Author Index