

Odors and Air Pollutants Conference 2014

Miami, Florida, USA
31 May – 3 June 2014

ISBN: 978-1-5108-7152-6

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© (2014) by Water Environment Federation (WEF)
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact Water Environment Federation (WEF)
at the address below.

Water Environment Federation (WEF)
601 Wythe Street
Alexandria, Virginia 22314
USA

Phone: 1-800-666-0206
Fax: 1-703-684-1545

csc@wef.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

TRICKLING FILTERS FOUL AIR CHARACTERISTICS AND TREATMENT WITH ACTIVATED CARBON MEDIA	1
<i>M. Kyi</i>	
ODOR CONTROL TECHNOLOGY EVALUATION FOR A SOUTH FLORIDA WASTEWATER TREATMENT PLANT: A CASE STUDY ON WHY UTILITIES SHOULD LOOK BEYOND CHEMICAL SCRUBBING	9
<i>E. Tilen, P. Wolstenholme</i>	
DAVENPORT COMPOST FACILITY ODOR CONTROL IMPROVEMENTS	20
<i>T. Williams, S. Plett</i>	
SIOUX CITY, IOWA ODOR CONTROL: A MULTIPHASE APPROACH	31
<i>J. Dundas, D. McCaslen, G. Dehinsky, M. Nelson</i>	
HYDROGEN SULFIDE ODOR CONTROL PROGRAM COST REDUCTION THROUGH DOSING AND MONITORING AUTOMATION	43
<i>J. Macpherson, S. Porter, T. Alford, G. Tomlinson</i>	
DESIGNING A LARGE INORGANIC MEDIA BIOFILTER AT THE STICKNEY WATER RECLAMATION FACILITY	63
<i>R. Stallings, B. Klepp, H. Chu</i>	
ZEBRA STATISTICS FOR ODOR	76
<i>C. McGinley, M. McGinley</i>	
DETERMINATION OF THE IMPACT OF PANEL SIZE AND PRESENTATION MODE ON THE VARIABILITY OF ODOUR DETECTION THRESHOLD CONCENTRATION	93
<i>D. Choiniere, D. Giard, H. Kazemi, S. Barrington</i>	
ESTIMATION OF ODOUR DETECTION THRESHOLD VALUES FOR SELECTED PURE COMPOUNDS	102
<i>A. Bokowa, M. Bokowa</i>	
ATMOSPHERIC TURBULENCE AND ODOR FLUCTUATIONS: THE INCONVENIENT PHYSICS	110
<i>T. Page, D. Froehlich</i>	
ODOUR MONITORING BY NOVEL MULTI-SENSOR ARRAY SYSTEM	126
<i>V. Naddeo, T. Zarra, V. Belgiorno</i>	
STATE-OF-THE-ART ODOR CONTROL AT THE BRIGHTWATER WASTEWATER TREATMENT PLANT	135
<i>S. Cowden, S. Hummel, R. Kohler, T. Hastings</i>	
INNOVATIVE STRIPPING CHAMBER SOLVES ODOR PROBLEMS FOR A PUMP STATION IN OTTAWA	155
<i>J. Uglevich, J. Ricker, E. McEachran, J. Joyce</i>	
PHOTOIONISATION: A SUPERIOR ODOR-CONTROL TECHNOLOGY	164
<i>C. Pride, O. Augustin</i>	
AIR POLLUTANTS AND ODOR REDUCTION SYSTEM FOR DIGESTER GAS-FIRED ENGINES	175
<i>V. Kogan, J. Colston, L. Rothbart, T. Ahn, R. Shaban, D. Voorst</i>	
PILOT TEST OF A UV-ENHANCED BIOLOGICAL ODOR CONTROL SYSTEM	189
<i>R. Parker, J. Harshman, D. Morano</i>	
ODOR CONTROL PLANNING FOR THE EDWARDS WWTF – KEEPING AIR FRESH IN THE COLORADO ROCKIES	199
<i>N. Webster, S. Oppenheim, J. Schneider, M. Marts, P. Newbanks III</i>	
2014 OCSO ODOR CONTROL MASTER PLAN	216
<i>T. Vitko, I. Suffet, Y. Zhou, S. Abrahams</i>	
WET WEATHER BASIN ODOR CONTROL: THE TREND OF THE FUTURE?	233
<i>S. Worley, B. Koetter, M. Rudisell</i>	
TARGETED ODOR AND AIR TOXIC CONTROL FOR SOLIDS HANDLING FACILITIES TO MEET STRICT PUBLIC AND REGULATORY REQUIREMENTS	247
<i>D. McEwen</i>	
PRELIMINARY ASSESSMENT OF THE IMPACT OF THERMAL DRYING ON VOLATILE SULFUR EMISSIONS FROM DEWATERED BIOSOLIDS	260
<i>E. Sivret, N. Minh, L. Riese, S. Kenny, G. Paricsi, H. Bustamante, R. Stuetz</i>	

MEASURING BENEFITS OF ODOR CONTROL	271
<i>J. Davis</i>	
AIR FLOW IN GRAVITY SEWERS – DETERMINATION OF WASTEWATER DRAG COEFFICIENT	283
<i>T. Bentzen, K. Ostertoft, J. Vollertsen, E. Fuglsang, A. Nielsen</i>	
OPTIMIZING ODOR CONTROL SOLUTIONS FOR A NEW INTERCEPTOR WITH AIR FLOW AND ODOR GENERATION MODELING	312
<i>E. Culbertson, P. Wolstenholme, J. Revels</i>	
ODOR MODELING FOR SKEPTICS	340
<i>P. Diosey</i>	
SYDNEY WATER CORROSION AND ODOUR MANAGEMENT TOOL	354
<i>J. Gonzalez, B. Kraakman, Y. Wang, L. Vorretier, J. Cesca, T. Nguyen</i>	
MODELING ODORS AND HYDROGEN SULFIDE IN THE SEWERS OF SAN FRANCISCO	369
<i>J. Vollertsen, N. Revilla, T. Hvitved-Jacobsen, A. Nielsen</i>	
ESTABLISHING BASE AMBIENT ODOR IMPACT LEVELS USING AIR DISPERSION MODELING FOR ODOR CONTROL PLANNING	380
<i>J. Kwiatkowski, K. Voit, S. Sekula, J. Ehrhardt, J. Marx</i>	
MEASURES TO ENSURE H₂S EXPOSURE LIMITS FOR MUNICIPAL AND INDUSTRIAL WASTE WATER – CASE STUDIES AND LITERATURE REVIEW	393
<i>W. Franke, M. Ettl</i>	
RELEASE AND PARTITIONING OF SILOXANES DURING BIOSOLIDS DECOMPOSITION IN ANAEROBIC DIGESTERS	404
<i>S. Saitra, B. Tansel</i>	
ODOR CONTROL USING NOVEL BIOFILTRATION MEDIA WITH A HYDROXYL GENERATOR POLISHER	413
<i>P. Fox, B. Abbott</i>	
THE SULFUR CYCLE AND ITS IMPACT ON HYDROGEN SULFIDE EMISSIONS: AN INVESTIGATION AT THE CITY OF ST. PETERSBURG, FLORIDA	433
<i>P. Wolstenholme, C. Muller, H. Flippin, A. Mody</i>	
ELIMINATION OF HYDROGEN SULFIDE(H₂S) USING OXYGEN FROM AMBIENT AIR	445
<i>G. Federico, G. Smith</i>	
A COMPARATIVE ANALYSIS FOR IMPROVING THE CUSTOMER ODOR COMPLAINT EXPERIENCE	469
<i>C. Dillon</i>	
THE FUTURE OF COMMUNITY ODOR NUISANCE	477
<i>C. McGinley, M. McGinley</i>	
USING A HYDROGEN SULFIDE MONITORING PROGRAM TO ASSESS CORROSION RISK IN INTERCEPTOR SEWER SYSTEM ASSETS	493
<i>D. Porter, G. Serge, E. Culbertson, M. Feltner</i>	
POSITIVE FEEDBACK: ODOR CONTROL & ASSET MANAGEMENT	521
<i>C. Hunniford</i>	
DESIGNING AND EXECUTING AN ODOR SAMPLING PROGRAM AT A 370 MGD WASTEWATER TREATMENT PLAN	528
<i>K. Voit, J. Ehrhardt, J. Marx, L. Hentz, S. Kharkar, W. Bailey, S. Murthy, J. Carr</i>	
PILOT TEST OF A UV ODOR CONTROL SYSTEM AT THE ULU PANDAN WRP, SINGAPORE	558
<i>R. Parker, H. Lim</i>	
USING WHAT YOU’VE GOT – INNOVATIVE ODOR CONTROL	576
<i>B. Koetter, N. Webster, M. Ray, P. Wagoner, J. Cole</i>	
PRIMARY CLARIFIER ODOR CONTROL – REPLACING NITRATES WITH DISSOLVED OXYGEN	594
<i>K. Jacobs</i>	
ODOR CONTROL OF WASTEWATER CONTAINING LEACHATE IN A 14 MILE SEWER	603
<i>C. Szczucki, B. Gotham, C. Young</i>	
A MULTI-FACETED APPROACH TO ODOR CONTROL FOR A 28.5-MILE LONG FORCE MAIN	615
<i>K. Smeby, D. Ehrhardt, B. Duane</i>	
APPLYING ODOR CONTROL TECHNOLOGIES USING RELIABILITY AND SUSTAINABILITY CRITERIA – EXAMPLES OF FULL-SCALE OUTCOMES	641
<i>J. Cesca, B. Kraakman</i>	
COMPARISON OF FOUL AIR TREATMENT SYSTEMS INCORPORATING SUSTAINABILITY AND TRIPLE BOTTOM LINE ANALYSIS	655
<i>S. Neff, P. Wolstenholme</i>	

IONIZED ODOR CONTROL PROVIDES ENERGY SAVING SUSTAINABLE ODOR CONTROL SOLUTION AT CITY OF RIFLE, COLORADO, REGIONAL WASTEWATER RECLAMATION FACILITY	664
<i>D. Tulenko, D. Gallegos</i>	
GREENHOUSE GAS EMISSIONS FROM MUNICIPAL WASTEWATER TREATMENT PLANTS	674
<i>K. Smith, M. Erten-Unal, J. Whitelaw</i>	
THE SYNERGISTIC USE OF BIOFILTRATION WITH ADSORPTIVE TECHNOLOGIES TO IMPROVE RELIABILITY, COST & SUSTAINABILITY FOR INDUSTRIAL VOC CONTROL	686
<i>R. Loken, B. Schwartz, Y. Yang</i>	
WASTEWATER TREATMENT PLANT ODOR CONTROL – SATISFYING A NEIGHBORHOOD CONCERN	700
<i>R. Pope, N. Federici</i>	
TROUBLESHOOTING ODOR CONTROL EFFICIENCY PROBLEMS WITH A VERTICAL BED, HORIZONTAL AIRFLOW, CYLINDRICAL CARBON BED SCRUBBER – LESSONS LEARNED	713
<i>D. Apgar</i>	
ODOR CONTROL BLOWER SYSTEMS: PRACTICAL POINTERS AND LESSONS LEARNED	728
<i>F. Lewis, D. Maleich, D. Price, W. Hartnett</i>	
MIXING RAS WITH RAW SEWAGE TO REDUCE ODOR EMISSIONS WHILE AVOIDING ADVERSE IMPACTS TO PROCESSES	743
<i>D. Schmidt, J. Karleskint, J. Porter, D. Parker, K. Hoskins</i>	
PERFORMANCE TESTING OF MULTIPLE ODOR CONTROL TECHNOLOGIES AT ONE WWTP - WHAT WORKS AND WHAT DOESN'T	757
<i>R. Stallings, M. Riendeau, J. Fahmie, J. Koch, J. Dai</i>	
ODOR CONTROL SYSTEM UPGRADES: EXPERIENCES AT SAN DIEGO'S METROPOLITAN BIOSOLIDS CENTER	768
<i>A. Pai, V. Occiano Jr., D. McEwen, I. Rosa</i>	
USE OF FORCE MAIN MODELING TO EVALUATE GAS EMISSIONS FROM LONG FORCE MAIN SYSTEMS: CASE STUDIES OF METHANE AND NITROGEN GAS CONTROL	781
<i>C. Easter, M. Ward, C. Bott, J. Sparks</i>	
QUICK-DISSOLVING ALKALINE ADDITIVE PROVIDES TEMPORARY ODOR CONTROL FOR THE CITY OF TAMPA	808
<i>V. Harshman, C. Lynch</i>	
EVALUATION OF CHEMICAL TREATMENT ALTERNATIVES FOR ODOR AND CORROSION CONTROL IN A LARGE, COASTAL FLORIDA COLLECTION SYSTEM	822
<i>R. McKenna, I. Venner, M. Brown</i>	
IMPLEMENTING VAPOR PHASE ODOR CONTROL ON LARGE DIAMETER INTERCEPTOR SYSTEMS	847
<i>B. Huang, J. Joyce, C. Hunniford</i>	
FLOATING INTERCEPTOR POSES ODOR CONTROL SOLUTION CHALLENGES	858
<i>M. Smith, J. Komerek, T. Mills, J. Duletzke</i>	
WASTEWATER COLLECTION SYSTEM HYDROGEN SULFIDE EMISSION CONTROL WITH NITRATE SALTS AND MAGNESIUM HYDROXIDE	870
<i>C. Morton</i>	
Author Index	