

Odors and Air Pollutants Conference 2018

Portland, Oregon, USA
25 - 28 March 2018

ISBN: 978-1-5108-6743-7

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© (2018) 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

SESSION 1

NEW CONCEPT AND NEW RESULTS FOR INSTRUMENTAL MEASUREMENT OF ODOROUS COMPOUNDS	1
<i>J.M. Guillot, S. Lafhal-Sakiou</i>	
HOW REDUCED SULFUR COMPOUNDS IN TRUNKLINE FOUL AIR VARY OVER DIURNAL FLUCTUATIONS AT OCSO WASTEWATER TREATMENT PLANT	6
<i>T.G. Vitko</i>	
ODOR THRESHOLD DETERMINATION – A REVIEW OF THE EFFECT OF NUMBER OF ASSESSORS	15
<i>M. McGinley, C. McGinley, K. Weiss</i>	

SESSION 2

ODOR CONTROL – A JOURNEY OF 14 YEARS	28
<i>J. Bennett</i>	
ORANGE COUNTY SANITATION DISTRICT’S PROACTIVE STRATEGIES FOR PREVENTING ODOR COMPLAINTS	32
<i>R. Sobhani, B. Reed, M.P. Velasco, C. Thomas</i>	
IN THE WORLD OF ODOR CONTROL – THE COMMUNITY RULES	44
<i>R.J. Pope</i>	

SESSION 3

INFLUENCE OF BIOSOLIDS PROCESSING ON THE PRODUCTION OF ODOROUS EMISSIONS AT WASTEWATER TREATMENT PLANTS	63
<i>R. Fisher, J. Hayes, J.P. Alvarez-Gaitan, R. Aurisch, D. Vitanage, R. Stuetz</i>	
OPTIMIZING HYDROGEN PEROXIDE DOSING FOR ODOR CONTROL ORIGINATING FROM THE SEPTAGE HAULER DUMPING AREA AT THE CITY OF KENOSHA, WISCONSIN’S WASTEWATER TREATMENT PLANT	68
<i>M.L. Nelson, B. Sotiroff, M. Arnot, K. Karow</i>	
FOOD WASTE IMPACT STUDY: SEWER PROCESS MODELLING FOR FUTURE OPTIONS ASSESSMENT	74
<i>N.J.R. Kraakman, B. Johnson, C. Ransom, D. Bassett, G. Kedan</i>	
THE BALANCE BETWEEN LEAN-BURN ANAEROBIC DIGESTION POWER PRODUCTION, FORMALDEHYDE FORMATION, AND PUBLIC HEALTH CONCERNS	104
<i>M. Lannan, K. Mears</i>	

SESSION 4

USING WATS SEWER PROCESS MODEL FOR PROJECT PRE-DESIGN	113
<i>G.J. Chiu, N. Revilla, J. Vollertsen</i>	
HYDROGEN SULFIDE CONTROL IN WASTEWATER PONDS USING STRATEGIC DOSING OF HYDROGEN PEROXIDE AT SOUTHERN MINNESOTA BEET SUGAR COOPERATIVE	129
<i>M.L. Nelson, S. Sunkavalli</i>	
CITY OF LOS ANGELES PILOT TEST ON A SUSPENDED CARBON VESSEL DESIGN	135
<i>C. Gilani, H. Haddad-Zadegan, S. Symons, A. Poosti, A. Hagekhalil</i>	
THE PRESSURE IS ON – ENFORCEABLE ODOR LIMITS	147
<i>A. Wistrom, J. Delin</i>	

SESSION 5

TESTING THE DMS CAPACITY OF SPECIALIZED ADSORPTIVE MEDIA 155
R. McKenna, M. Ward, E. Yilma

SESSION 6

**ODOR PRACTICES IN THE COLLECTION SYSTEM AND WRRF: RESULTS FROM THE 2016
ODOR BENCHMARKING SURVEY** 168
C.D. Dillon, D. Froehlich, E. Hansen, M.S. Holstad, R. Porter, P. Wolstenholme

HOW TO BOIL DOWN OCSD'S ODOR CONTROL MASTER PLAN INTO ONE PAGE 192
T.G. Vitko

**EL PASO IMPLEMENTS ODOR CONTROL IMPROVEMENTS TO REMAIN A "GOOD
NEIGHBOR"** 213
R.J. Pope, A.L. Chacon

QUALITY CONTROL OF THE CONTAINMENT OF GASES IN COVERED PROCESSES 218
N.J.R. Kraakman, G. Hamer, R. Gonzalez-Abraham, J. Cesca, J. Witherspoon

SESSION 7

**ODOR CONTROL SCRUBBER SYSTEM PLANNING AND DESIGN WITH LIMITED SOURCE
SPECIFIC DATA** 232
D. Apgar

**IMPLEMENTING AN ODOR CONTROL PROGRAM FOR A CENTRALIZED SLUDGE
PROCESSING AND LOADING FACILITY** 248
J.S. McMillen

**THE DISTRICT OF BARRIERE, BRITISH COLUMBIA IMPLEMENTS AN INNOVATIVE
HYDRAULIC ODOR CONTROL SYSTEM** 258
R. St-Aubin

WAIT, WHY DO I NEED ODOR CONTROL AT A FARM-BASED DIGESTER PROJECT? 266
M. Lannan, M. Riegert

SESSION 8

IDENTIFICATION OF MUSTY ODOR NUISANCE AT WASTEWATER TREATMENT PLANTS 276
Y. Zhou, T. Vitko, S. Cowden, L.H. Suffet

EFFECTS OF DIURNAL PH VARIATION IN SEWER PROCESS MODELING 294
M. Steele, M. Ward, J. Vollertsen

**MULTIPLE TECHNOLOGY PILOT TESTING SUPPORTS SELECTION OF TARGETED FOUL
AIR TREATMENT** 304
S. Cowden, J. Witherspoon, Z. Erdal, C. Dillon, T. Vitko, S. Boswell, Y. Zhou, I.H. Suffet

SESSION 9

**TWO-STAGE BIOLOGICAL ODOR CONTROL SYSTEM TREATS WWTP HEADWORKS
EXHAUST AIR** 334
C.M. Morton, T. Card, M. Smith, W.J. Merkle

**PERFORMANCE OF COMBINED TWO-STAGE BIOTOWER AND CARBON SYSTEM: WHEN
GREAT IS NOT QUITE GOOD ENOUGH** 352
C. Easter, M. Feltner, C. Wilson, A. Keisel

**BIOTRICKLING FILTRATION OF SEWAGE PLANT EXHAUSTS – RECIRCULATION
VERSUS ONCE-THROUGH IRRIGATION** 371
D.S. Webb, H. Husain, C. Olesen

**MINIATURIZED BIOTRICKLING FILTERS FOR PROCESS INTENSIFICATION OF INDOOR
AIR VOC TREATMENT** 384
L.R.L.D. Leon, K.E. Deaton, M.A. Deshusses

ACTIVATED CARBON AS A SUPPORT IN BIOTRICKLING FILTERS FOR THE REMOVAL OF SILOXANES IN SEWAGE SLUDGE BIOGAS	401
<i>E. Santos-Clotas, A. Cabrera-Codony, M.J. Marin</i>	

SESSION 10

TRICKLING FILTERS FOUL AIR TREATMENT WITH CHEMICAL SCRUBBERS AND REMOVAL EFFICIENCIES FOR METHYL MERCAPTAN AND DIMETHYL SULFIDE	409
<i>M. Kyi</i>	
RELATIONSHIP BETWEEN HYDROGEN SULPHIDE AND ODOUR UNITS FOR LONDON SEWAGE	420
<i>S. Georgaki, D. Vernon, R. Baur, D. Black, B. Desing, D. Crawford</i>	
ODOR INVESTIGATIONS - WHAT EQUIPMENT DO I NEED AND WHAT WILL THE DATA MEAN?	428
<i>R.J. Pope</i>	
ODOR STRENGTH – THE FORGOTTEN ODOUR PARAMETER	452
<i>M. Paduch, C. Diaz, C. McGinley, M. McGinley</i>	

SESSION 11

CONDITION ASSESSMENT PRACTICES FOR FRP ODOUR CONTROL DUCTWORK AND EQUIPMENT IN WASTEWATER TREATMENT PLANTS	463
<i>R. Nixon, D. Sherman</i>	
CONVERTING AN ODOUR CONTROL PLAN TO CORROSION CONTROL	483
<i>E. Wright, V. Harshman</i>	
PUMPING A SPLASH? IT'S A GAS(-GAS-GAS)! IS YOUR FORCE MAIN VULNERABLE TO INTERIOR CORROSION?	495
<i>D. Porter, M. Feltner</i>	

SESSION 12

PORTABLE ODOUR CONTROL – A SOLUTION TO WASTEWATER CONSTRUCTION PROJECTS ODOUR PROBLEMS IN ALBUQUERQUE	504
<i>N.A. Webster, J. Erstgaard, P. Parkins, B. Koetter</i>	
ODOR CONTROL USING PURE OXYGEN, RAYMORE, MO	517
<i>D. Clidence</i>	
CASE STUDIES FOR THE IMPLEMENTATION OF VENTILATION STRATEGIES USING NEW VENTILATION MODELLING TOOLS	525
<i>J. Cesca, G. Hamer</i>	
TOWN OF CARY, NC. PREVENTING A COLLECTION SYSTEM ODOUR ISSUE—FROM CONCEPT THROUGH FINAL PERFORMANCE TEST AND BEYOND	544
<i>J. Buchanan, R. Sprowl</i>	
UNDERSTANDING MECHANISMS AND SOURCES OF ODORS IN RESOURCE RECOVERY FACILITIES: IMPACT OF COLLECTION SYSTEM, PRIMARY AND SECONDARY TREATMENT	560
<i>U. Bazemo, A. Romero, A. Spriggs, H. Hauduc, A. Al-Omari, I. Takacs, S. Murthy, A. Torrents, M. Higgins, H.D. Clippeleir</i>	

SESSION 13

ASSESSMENT OF ODOUR EMISSIONS AT A MUNICIPAL WWTP IN THE MIDDLE EAST	568
<i>T. Dunaev, L.L. Roux, H. Ezal-Deen</i>	
NEW GHG METHODOLOGY TO ESTIMATE/QUANTIFY SEWER METHANE	582
<i>J. Willis, B. Brower, W. Graf, S. Murthy, C. Peot, P. Regmi, K. Sharma, Z. Yuan</i>	
COMPARISON OF CHARACTERIZATION TECHNIQUES FOR WASTEWATER TREATMENT PLANT ODOUR EVALUATIONS	590
<i>P.G. Diosey</i>	

PROACTIVELY MONITORING AND MANAGING ODORS USING REAL-TIME ODOR PLUME PREDICTION	600
<i>C.G. Smith, S. Daniels</i>	
WATS SEWER PROCESS MODEL AS A TOOL FOR CONSTRUCTION PROJECTS ALTERNATIVE SELECTION	611
<i>N. Revilla, G.J. Chiu, J. Vollertsen</i>	
USING ODOR PANEL DATA TO ENHANCE ODOR DISPERSION MODELS – REALITY CHECKS PROVIDE BETTER RESULTS	626
<i>D. McEwen, C. McGinley</i>	
Author Index	