

The Thirty-Second International Conference on Solid Waste Technology and Management

Philadelphia, PA, USA

March 19-22, 2017

AGENDA

(updated March 10, 2017)

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- Maria Cristina Borba Braga, Parana Federal University, Brazil
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- Toru Furuichi, Hokkaido University, Japan
- Professor Sadhan Kumar Ghosh, President, International Society of Waste Management, Air and Water, & Mechanical Engineering Dept., Jadavpur University, India
- Dr.(Mrs.) Kasturi Gadgil, I.I.T., Delhi (retired), India
- Ruby Mejía de Gutiérrez, Universidad del Valle (Cali), Colombia
- Mervat El-Hoz, University of Balamand, Lebanon
- Maria Liubarskaia, Saint-Petersburg State University of Economics, Baltic Academy for Tourism and Entrepreneurship, Russia
- Dr. Mary Purcell, Cork Institute of Technology, Ireland
- Ilan Nissim, Ministry of National Infrastructures, Energy and Water Resources, Israel
- Sara Ojeda-Benitez, Institute of Engineering, Autonomous University of Baja California, México
- Dr. Chukwu Onu, Southern University and A & M College, USA
- Professor Paul Phillips, University of Northampton, UK
- Dr. Eva Pongrácz, University of Oulu, Finland
- Prof. Krishna Reddy, University of Illinois at Chicago, USA
- Dr. Masafumi Tateda, Toyama Prefectural University, Japan
- Dr. Jerry E. Uhuo, National Assembly Abuja, Nigeria
- Prof. Dongmin Wang, Director of Solid Waste Subcommittee of The Chinese Ceramic Society, P.R. China
- Anita Závodská, Barry University, USA

CONFERENCE SUMMARY

SUNDAY, MARCH 19, 2017

- Pre-Conference Tour of Philadelphia
- Opening Reception

MONDAY, MARCH 20, 2017

Opening Plenary

Oral Presentations

- 1A Landfill 1
- 1B Agricultural Wastes 1
- 1C Policy and Public Involvement 1
- 1D Use of Wastes in Construction 1

- 2A Biological Treatment 1
- 2B Contaminated Sites
- 2C Waste Management Planning 1
- 2D Special Wastes

- 3A Chemical Treatment Advances 1
- 3B Electrical and Electronic Wastes
- 3C Landfill 2
- 3D Case Studies

- 4A Agricultural Wastes 2
- 4B Special Session: Construction and Demolition Wastes for Sustainable Architecture
- 4C Waste Management Planning 2
- 4D Special Workshop: Elevated Temperature in Landfills: Occurrences, Impacts, and Resolution

Poster Session 1

TUESDAY, MARCH 21, 2017

Oral Presentations

- 5A Policy and Public Involvement 2
- 5B Biological Treatment 2
- 5C Facility Siting and Planning
- 5D Environmental and Health Impacts

- 6A Waste Business Analyses
- 6B Waste Management in Developing Areas
- 6C Use of Wastes in Construction 2
- 6D Special Session on Pyrolysis

Poster Session 2

- 7A Landfill 3
- 7B Recycled Materials
- 7C Chemical Treatment Advances 2
- 7D Agricultural Wastes 3

Closing Reception

WEDNESDAY, MARCH 22, 2017

Technical Field Trips

DETAILED AGENDA

SUNDAY, MARCH 19

12:00 p.m. - 6:00 p.m.

Conference check-in and registration

1:00 p.m. - 5:00 p.m.

Guided Tour of Philadelphia: The tour will include the Liberty Bell, Independence Hall and the Betsy Ross House along with a bus tour of the city.
(additional fee)

5:00 p.m. - 6:00 p.m.

Welcome Reception

MONDAY, MARCH 20

8:00 a.m. - 5:30 p.m.

Conference check-in and registration

8:00 a.m. – 8:45 a.m.

Coffee

8:45 a.m. – 10:00 a.m.

Opening Plenary

Welcome and US EPA Mid-Atlantic Update:

Update on The US EPA Sustainable Materials Management Program, John A. Armstead,
EPA Mid-Atlantic Region, Acting Deputy Regional Administrator, **USA**

Keynote Address:

Don't Waste a Bite - On the Link between Hunger and Waste Management, Ofira
Ayalon, The University of Haifa and Samuel Neaman Institute, Technion, **Israel**

Conference Theme Presentation:

Global Capacity, Potentials and Trends of Solid Waste Research and Management, M. A.
Nwachukwu, Federal University of Technology Owerri, **Nigeria**

Plenary Presentations:

Circular Economy and 3Rs - Reduce, Reuse, Recycle for Efficient Use of Resources,
Sadhan Kumar Ghosh, ISWMAW, Jadavpur University, **India**

Circular Economy & Sustainable Development – in India, Lakshmi Raghupathy, TERI
University, **India**

10:05 a.m. – 11:30 a.m.

Sessions 1

SESSION 1A

Landfill 1

Design Guidance for Reinforcement Layers under Piggyback Landfill Liner Systems, *Gregory Mills*, Smith Gardner, Inc., **USA**

Emerging Landfill Trends in Exposed Geomembrane Cover Systems and the New Wind Defender Ballast System, *Elliot Pugh*, Wind Defender, LLC, *James Tuttle*, Chesapeake Containment Systems, Inc., **USA**

The Future of Pre-Sub Title D Municipal Landfill Cleanups, *Michael Grappé*, Arkansas Department of Environmental Quality, **USA**

Mitigation of Greenhouse Gas Emissions from Landfills by Mechanical Biological Treatment - A Brazilian Case Study, *Francisco Contreras*, University of Brasilia, *Fernanda Lemos da Silva*, University of Brasilia, **Brazil**

SESSION 1B

Agricultural Wastes 1

Biogas as a Strategic Resource on Renewable Energies in South Brazil, *Marisa Soares Borges*, Federal University of Parana, *Marcelo Alves de Sousa*, Parque Tecnológico Itaipu, *Janaina Camile Pasqual*, Parque Tecnológico Itaipu, *Iara B.R. Rosa*, *Driely Rosa*, **Brazil**

Anaerobic Digestion: Efficient Organic Waste Reutilization for Integrated Waste Management and Carbon Reduction, *Serpil Guran*, Rutgers EcoComplex, *David Specca*, Rutgers EcoComplex, *Margaret Brennan-Tonetta*, Rutgers University, **USA**

Adding Waste Scrap Iron to Enhance Anaerobic Digestion of Biomass and Production of Methane, *Yaobin Zhang*, Dalian University of Technology, **China**

SESSION 1C

Policy and Public Involvement 1

Assessing Innovative Approaches in Urban Solid Waste Management, *Arti Jaiswal*, SPA, Bhopal, *Chandan*, SPA, Bhopal, *Sanjeev Rawat*, Architectural and Planning Consultancy Firm, **India**

The Role of Universities in Increasing Waste Awareness among Citizens, *Anita Zavodska*, Barry University, *Anne Morrissey*, *Yasuhiro Matsui*, **USA**

Public Behavior, Awareness, and Perception Concerning Household Solid Waste Recycling in Urban Area of China: A Case Study, *Xiao Liu*, Shandong University, *Peiming Zheng*, Shandong University, *Kun Zhang*, Shandong University, *Lidong Cao*, *Jianli Wen*, *Ning Wang*, *Fengchuan Wang*, *Shuping Zhang*, *Renqing Wang*, *Hui Wang*, **China**

Sustainable Solid Waste Management - Policy Comments, *Amalendu Bagchi*, Wisconsin Department of Natural Resources, **USA**

Enhancing Governance, Transparency and Accountability for Sustainable Solid Waste Management, *Mervat El-Hoz*, University of Balamand, **Lebanon**

SESSION 1D

Use of Wastes in Construction I

Effect of Lime and Geopolymer Stabilization on Shrinkage Property of Earth Mortar, *Priyadharshini Perumal*, Indian Institute of Technology - Madras, *K. Ramamurthy*, Indian Institute of Technology - Madras, *R. G. Robinson*, Indian Institute of Technology - Madras, **India**

The Effect of Waste Additives on the Mechanical Strength of Fired Clay Bricks, *Mehdi Serati*, The University of Queensland, *David Williams*, The University of Queensland, *Maria Durante Ingunza*, The University of Queensland, *Sebastian Quintero Olaya*, **Australia**

Geotechnical Characterisation of Neutralised Red Mud for Use in Civil Engineering Construction and Manufacturing, *Sebastian Quintero Olaya*, The University of Queensland, *Maria del Pilar Durante Ingunza*, Federal University of Rio Grande do Norte/UFRN, *David J. Williams*, The University of Queensland, *Mehdi Serati*, **Australia**

Durability Properties of Recycled and Secondary Aggregates (RSA) Concrete, *Amarnath Yerramala*, SRIT, *Ramachandrudu Chittari*, SRIT, **India**

11:30 a.m. – 11:50 a.m.

Break

11:50 a.m. – 1:10 p.m.

Sessions 2

SESSION 2A

Biological Treatment I

A Comparative Review of Biogas Production from Microalgae Biomass and Microalgae Waste, *Laura Vargas*, Instituto de Energias Renovables-UNAM, *Emilio Arenas*, Instituto de Energias Renovables-UNAM, *Pathiyamattom Joseph Sebastian*, Instituto de Energias Renovables-UNAM, **Mexico**

Application and Validation of ED-XRF and SEM-EDX Techniques in the Study of Composting Process, *S. L. Belagali*, University of Mysore, *B. Manohara*, University of Mysore, **India**

Biogas Production from Lignocellulose-Rich Waste Fractions, *Ilona Sárvári Horváth*, University of Borås, **Sweden**

Evaluation of Sampling Methods for Gas-Phase Siloxanes in Biogas, *Clara Eichler*, Virginia Tech, *Yaoxing Wu*, Virginia Tech, *Steven Cox*, Virginia Tech, *Stephanie Klaus*, Gregory D. Boardman, **USA**

Management Modeling of High COD Wastes Content of Biosolids for Energy Generation and Effluent Production in an Anaerobic Membrane Bioreactor, *Gideon Oron*, Ben-Gurion University of the Negev, Zuckerberg Water Research Institute, Blaustein Institutes for Research, *Oshrat Shamir*, Ben-Gurion University of the Negev, *Nadav Krauss*, Ben-Gurion University of the Negev, *Ioannis K. Kalavrouziotis*, **Israel**

SESSION 2B
Contaminated Sites

Waste-to-Energy Approach in Washing of Petroleum Contaminated Soil, *Bassim Abbassi*, University of Guelph, *Stephen Emslie*, University of Guelph, **Canada**

Coupled Estimation Method for Determination of Flow and Transport Parameters Using Transient Observation Data during Remediation of 1,4-Dioxane Groundwater Contamination, *Kazuei Ishii*, Hokkaido University, *Toru Furuichi*, Hokkaido University, *Atsushi Fujiyama*, Hokkaido University, *Masahiro Sato*, *Yumika Shishido*, **Japan**

Management of Contaminated Soil Generated from 16" HFO Pipeline Leakage at Jaber Al-Ahmad Residential Area, *Fatemah Al-Baroud*, Kuwait Oil Company, *Majed Al-Mutairi*, Kuwait Oil Company, *Krishna Vangala*, Kuwait Oil Company, *Ghadeer Al-Qattan*, **Kuwait**

SESSION 2C
Waste Management Planning 1

A Study of Household Waste Production in the Czech Republic as a Function of the Number of Household Members, *Libuše Benešová*, Charles University in Prague, *Jakub Šmíd*, Charles University in Prague, *Anita Zavodska*, Barry University, **Czech Republic**

Characterization of MSW Generated in Some Egyptian Cities, *Shakinaz El-Sheltawy*, Cairo University, *Salah El-Haggar*, American University in Cairo, *Mai Fouad*, Cairo University, *Eslam G. Al-Sakkari*, **Egypt**

A Retrospective of State Solid Waste Planning in the U.S.A., *Moe Chowdhury*, Jackson State University, *Ricardo Brown*, Jackson State University, *Wayne Goodwin*, Jackson State University, **USA**

Problems and Prospects of Solid Waste Management in South Africa: A Case of Khayelitsha Community, *Aifani Confidence Tahulela*, Cape Peninsula University of Technology, *Harry Ballard*, Cape Peninsula University of Technology, **South Africa**

SESSION 2D
Special Wastes

Design Challenges for Modifications to a Low Level Radioactive Waste Incinerator, *William Norris*, OBG, *Michael Mannuzza*, OBG, **USA**

Preparing Graphene-Copper Composite Material from Anode Graphite of Spent Lithium-Ion Batteries, *Wenxuan Zhang*, Tongji University, *Zhanpeng Liu*, Tongji University, *Wenzhi He*, Tongji University, *Guangming Li*, *Haochen Zhu*, *Juwen Huang*, **China**

Heading Toward Sustainable Management of Sewage Sludge, *Saleh Al-Muzaini*, Kuwait Institute for Scientific Research, **Kuwait**

Sawdust Management and Disposal through Use in Aquaculture Wastewater Treatment, *Olayemi Olanlokun*, University of Ilorin, *Bolaji Sule*, University of Ilorin, **Nigeria**

Analysis of Bio-Chemicals Extractable from Untreated Wood Waste, *Francesco Di Maria*, Università di Perugia, *Enrico Segoloni*, Università di Perugia, **Italia**

1:10 p.m. - 2:05 p.m.

Awards Luncheon

**Presentation of the Russell Ackoff Award, Roy F. Weston Award, Iraj Zandi Award
and Student Paper Award**

2:05 p.m. – 3:55 p.m.

Sessions 3

SESSION 3A

Chemical Treatment Advances

Adsorptive Removal of Reactive Yellow 84 by Effectual High Temperature Activated Carbon from *Borassus flabellifer* and Its Modified Magnetic Iron-Oxide Nano Adsorbent, *Karpagasundaram Muthukumaran*, Govt. College of Technology, Coimbatore under Directorate of Technical Education, Govt. of Tamilnadu, *S. Indhu*, Govt. College of Technology, Coimbatore under Directorate of Technical Education, Govt. of Tamilnadu, **India**

Assessing the Persistence of Trace Organic Compounds in Waste Coffee Grounds, *Rhianna Briars*, UCL, *Paul Hellier*, *Nicos Ladommatos*, *Arthur Kay*, *Ben Mills-Lamprey*, **United Kingdom**

Recovery of Lithium and Nickel from Lithium Nickel Oxide (LNO) in Spent Lithium Ion Battery, *Jeil-Pil Wang*, Pukyong National University, *Shun-Myung Shin*, Korea Institute of Geoscience and Mineral Resources, *Dong-Ju Shin*, Korea Institute of Geoscience and Mineral Resources, *Sung-Ho Joo*, Korea Institute of Geoscience and Mineral Resources, **South Korea**

SESSION 3B

Electrical and Electronic Wastes

Cloud Based Model for WEEE Collection and Monitoring, *Biswajit Debnath*, Jadavpur University, *Ipsita Saha*, Guru Nanak Institute of Technology, *Sadhan Ghosh*, Jadavpur University, **India**

E-Waste Generation, Management and Policy Addaptation Requirements to Secure Public Health in Bangladesh, *Mohammad Habibur Rahman*, BUET, *Alauddin Ahmed*, WHO, **Bangladesh**

Comparison between WEEE-Management in Switzerland and in Egypt, *Shakinaz El-Sheltawy*, Cairo University, *Dina Magdy*, CMRDI, **Egypt**

Review on Future Economic Potential Stems from Global Electronic Waste Generation and Sustainable Recycling Practices, *Shamim Ahsan*, Metropolitan State University of Denver, **USA**

US EPA Sustainable Materials Management and Electronic Wastes, *David Iacono*, US EPA, 3LC33, *Daniel Gallo*, US EPA, 3LC33, **USA**

SESSION 3C

Landfill 2

A Long-Term Study on Methane Degradation Layer Extracted from the Landfill, *Kaur-Mikk Pehme*, Estonian University of Life Sciences, *Merilin Heinsoo*, Estonian University of Life Sciences, *Kati Tammjärv*, Estonian University of Life Sciences, *Ottar Tamm*, *Mait Kriipsalu*, **Estonia**

Country Specific Methane Generation Potential (L0) of Solid Wastes in Landfills in Republic of Korea, *Sangjae Jeong*, Seoul National University, *Changmin Lee*, Seoul National University, *Jae Young Kim*, Seoul National University, **Republic of Korea**

Quantification of Human Health Risk to MSW Landfill Leachate Contamination for Major Indian Cites, *Harshit Mishra*, Indian Institute of Technology, *Vinay Yadav*, Indian Institute of Technology, *Subhankar Karmakar*, Indian Institute of Technology, *Rakesh Kumar*, **India**

Partial Nitrification and Denitrification of Mature Landfill Leachate Using a Pilot-Scale Continuous Activated Sludge Process at Low Dissolved Oxygen, *Zhenguo Chen*, South China University of Technology, *Xiaojun Wang*, South China University of Technology, *Yongyuan Yang*, South China University of Technology, *Markus W. Mirino Jr.*, **P. R. China**

Effects of Alkalinity on the Treatment of Landfill Leachate through Algae Growth, *Tahir Imran Qureshi*, NFC-Institute of Engineering & Technology, **Pakistan**

SESSION 3D

Case Studies

Managing Municipal Solid Waste in the Palestinian Territory: Joint Service Councils, a Sustainable Approach, *Ali Barhoum*, Joint Service Council of Solid Waste Management of the Local Authorities of Khan Younis, Rafah and Middle Area (JSC KRM), *Yasser Dwaik*, Joint Service Council of Solid Waste Management Hebron and Bethlehem, *Hani Shawahneh*, Joint Service Council of Solid Waste Management Jenin, **Gaza**

Resource Recovery from Waste in India – Case Studies, *Lakshmi Raghupathy*, TERI University, **India**

Decentralised Waste Management in High Rise Buildings – A Proposed Model for Self Reliance an Indian Case, *Rahul Baidya*, Institute of Engineering & Management, *Sadhan Kumar Ghosh*, Jadavpur University, **India**

Waste Recycling Practices in Some Countries in Asia, Europe, Africa and South America, *Sadhan Kumar Ghosh*, Jadavpur University, *Marisa Soares Borges*, Federal University of Parana, Brazil, *Sannidhya Kumar Ghosh*, University of Colorado Boulder, *Francesco Di Maria*, *Vanessa Cruvinel*, *Tomás Ramos*, *Shakinaz T. El-Sheltawi*, *M. K. Fouad*, *A. S. Aremu*, *O. M. Ojowuro*, *Chucheka Tivani*, *Yong-Chil Seo*, *Mervat El-Hoz*, **India**

Managing the Technology for Selectively Collecting Solid Waste in the Amazon, *Norma Maria Coelho Vieira*, University of Taubaté (UNITAU), Research Group on Innovation Management and Technology (GEITEC) at the Federal University of Rondônia (UNIR), Brazil, *Marcelo José Peres Gomes da Silva*, State University of Londrina (UEL), Brazil, *Flávio de São Pedro Filho*, GEITEC - Research Group Management of Innovation and Technology of the Federal University of Rondônia (UNIR), Brazil, University of Beira Interior, Covilha, Portugal, *Maria José Aguilhar Madeira Silva*, University of Beira Interior (UBI), Covilha, Portugal, *Fabricio Moraes de Almeida*, Federal University of Rondônia (UNIR), Brazil, GEITEC – Research Group on Management for Innovation and Technology, UNIR, Brazil, **Brazil**

3:55 p.m. – 4:15 p.m.

Break

4:15 p.m. – 5:55 p.m.

Sessions 4

SESSION 4A

Agricultural Wastes 2

Conversion of Agricultural Waste to Local Cattle Nutrition in Thailand, *Siriporn Boonpa*, St. Theresa International College, **Thailand**

Replacement of Fishmeal with Dried Chicken Intestine as Sole Animal Protein Source in the Nutrition of *Clarias gariepinus*, *Oluseun Motunrayo Osineye*, Federal College of Fisheries and Marine Technology, *Ladi Raji*, Federal College of Fisheries and Marine Technology, **Nigeria**

Municipal Sewage Sludge Increased Soil-Incorporated Biofumigants in Horticultural Crops, *George Antonious*, Kentucky State University, **USA**

Case Study: Optimal Operation of a Boiler Based on Solubility of Amorphous Silica in Rice Husk, *Masafumi Tateda*, Toyama Prefectural University, *Ryoko Sekifuji*, Toyama Prefectural University, *Atsushi Yamazaki*, Waseda University, *Mana Yasui*, **Japan**

A Comparative Study on the Effect of Sodium Chloride as a Secondary Salt Use in PKL (Scientific Name- *Bryophyllum pinnatum*) and Lemon Juice for Electricity Generation, *Md Asrafusjaman*, Jagannath University, *Tanjila Akter*, Jagannath University, *Mohammad Al Mamun*, Jagannath University, *Mehedi Hasan*, *K.A. Khan*, **Bangladesh**

SESSION 4B

Special Session:

Construction and Demolition Wastes for Sustainable Architecture

Innovative Uses of Dredged Material for Sustainable Architecture, *Rui Liu*, Kent State University, **USA**

Investigations on the Re-Utilization of Concrete Waste Sand in Composite Cements, *Martin Reformat*, Bauhaus-Universität Weimar, F.A. Finger-Institute for Building Materials Science (FIB), *Horst-Michael Ludwig*, Bauhaus-Universität Weimar, F.A. Finger-Institute for Building Materials Science (FIB), **Germany**

Use of Construction and Demolition Waste (CDW) in Interlocked Floor Preparation for Paving, *Silvio Rainho Teixeira*, São Paulo State University/School of Technology and Sciences, *Caique Bonfietti Martins*, São Paulo State University/School of Technology and Sciences, *Agda Eunice Souza*, São Paulo State University/School of Technology and Sciences, *Wellington Caldeira*, **Brazil**

Use of Construction and Demolition Residues (CDR) as a Non-Plastic Material for the Production of Ceramic Bricks, *Silvio Rainho Teixeira*, São Paulo State University/School of Technology and Sciences, *Milena Gomes Talavera Gaspareto*, São Paulo State University/School of Technology and Sciences, **Brazil**

Construction and Demolition Waste Materials Recycling in Nigeria, *Olufemi Oyedele*, Government of the State of Osun, *Folasade Idowu*, Obafemi Awolowo University, **Nigeria**

SESSION 4C

Waste Management Planning 2

A New Perception of Municipal Solid Waste Management in Egypt: Waste to Energy Approach, *Shakinaz Taha El Sheltawy*, Cairo University Giza, *Mai Mohamed Kamal El Din Fouad*, Cairo University Giza, *Hanem Sibak*, Cairo University Giza, **Egypt**

Bio-Medical Waste Management in India – A Novel Approach, *Lakshmi Raghupathy*, TERI University, **India**

E-Waste Collection Channels for Effective Management, *Lakshmi Raghupathy*, TERI University, *Dharna Tiwari*, Amity University, **India**

E-Waste Recycling in India: A Case Study, *Biswajit Debnath*, Jadavpur University, *Sadhan Kumar Ghosh*, Jadavpur University, **India**

SESSION 4D

Special Workshop: Elevated Temperature in Landfills: Occurrences, Impacts, and Resolution

A Model to Describe Heat Generation and Accumulation at Municipal Solid Waste Landfills, *Zisu Hao*, North Carolina State University, *Joel Ducoste*, North Carolina State University, *Marco Castaldi*, The City College of New York, CUNY, *Scott Luettich*, , Geosyntec Consultants, *Craig Benson*, University of Virginia, *Bryan Staley*, EREF, *Morton Barlaz*, N.C. State University, **USA**

A Simple Spreadsheet Model for Elevated Temperatures in Waste, *Henry Kerfoot*, Civil and Environmental Consultants, **USA**

Heat Balance Calculations for Landfills with Accelerated Decomposition of Organic Matter and Implications for Landfill Temperature, *Henry Kerfoot*, Civil and Environmental Consultants, **USA**

Implications of Elevated Temperature Landfills to Leachate Chemistry and Treatment Technologies, *Ivan Cooper*, Civil & Environmental Consultants, Inc., **USA**

6:00 p.m. – 7:00 p.m

Posters 1

6:30 p.m. – 7:30 p.m

Reception

Information Meeting with Bryan Staley of EREF- Environmental
Research & Education Foundation

POSTER SESSION 1

Fuel Properties of Municipal Solid Waste (MSW) by Using a Weighted Sum Method in a TGA, *Hong Cui*, HNEI, University of Hawaii at Manoa, *Scott Turn*, HNEI, University of Hawaii at Manoa, **USA**

Solid Waste Management in Jimma City, *Michael Yirga*, Jimma University, **Ethiopia**

Solid Waste Management in Addis Abeba, *Hanna Berhanu*, Haramaya, **Ethiopia**

Marble Waste Recycling and Its Application in the Steel Desulphurization Process, *Jorge Luis Coleti*, USP - University of Sao Paulo, *Felipe Fardin Grillo*, UNESC - University of South Catarinense, *Jorge Alberto Soares Tenorio*, USP - University of Sao Paulo, **Brazil**

Isolation and Characterization of Cyanide Degrading Bacteria from Artisanal Gold Mine Tailings, *Amzy Vallenias Arévalo*, USP - Universidade de São Paulo, *Claudia Monge Pimentel*, URP - Universidad Ricardo Palma, *Carlos Alvarez Rosario*, USP - Universidade de São Paulo, *B. Karolski*, *A. S. Justo*, *J. L. Coleti*, *J. A. S. Tenório*, **Brazil**

Asphalt Mixtures Energy Consumption and Emission, *Liseane Padilha Thives*, Federal University of Santa Catarina, *EneDir Ghisi*, Federal University of Santa Catarina, **Brazil**

A Comparative Study on the Effect of Sodium Chloride as a Secondary Salt Use in PKL (Scientific Name- Bryophyllum pinnatum) and Lemon Juice for Electricity Generation, *Md Asrafusjaman*, Jagannath University, *Tanjila Akter*, Jagannath University, *Mohammad Al Mamun*, Jagannath University, *Mehedi Hasan*, *K.A. Khan*, **Bangladesh**

A Comparative Review of Biogas Production from Microalgae Biomass and Microalgae Waste, *Laura Vargas*, Instituto de Energias Renovables-UNAM, *Emilio Arenas*, Instituto de Energias Renovables-UNAM, *Pathiyamattom Joseph Sebastian*, Instituto de Energias Renovables-UNAM, **Mexico**

Characteristics of Organic Fouling on RO Membrane from MSW Leachate Treatment Systems, *Xiaolan Zeng*, Chongqing University, *Yujia Yao*, Chongqing University, *Wenchuan Ding*, Chongqing University, *Kunyu Li*, **China**

Quantification of Human Health Risk to MSW Landfill Leachate Contamination for Major Indian Cites, *Harshit Mishra*, Indian Institute of Technology, *Vinay Yadav*, Indian Institute of Technology, *Subhankar Karmakar*, Indian Institute of Technology, *Rakesh Kumar*, **India**

Mitigation of Greenhouse Gas Emissions from Landfills by Mechanical Biological Treatment - A Brazilian Case Study, *Francisco Contreras*, University of Brasilia, *Fernanda Lemos da Silva*, University of Brasilia, **Brazil**

Managing Municipal Solid Waste in the Palestinian Territory: Joint Service Councils, a Sustainable Approach, *Ali Barhoum*, Joint Service Council of Solid Waste Management of the Local Authorities of Khan Younis, Rafah and Middle Area (JSC KRM), *Yasser Dwaik*, Joint Service Council of Solid Waste Management Hebron and Bethlehem, *Hani Shawahneh*, Joint Service Council of Solid Waste Management Jenin, **Gaza**

Social Aspects of Solid Wastes Management in Curitiba: Green Exchange – A Success Case, *Marisa Soares Borges*, Federal University of Parana, *Flavia Soccol*, Pontifical Catholic University of Parana, *Marina C.R. Ballao*, Municipal Secretariat of Environment Curitiba City Hall, **Brazil**

Problems and Prospects of Solid Waste Management in South Africa: A Case of Khayelitsha Community, *Aifani Confidence Tahulela*, Cape Peninsula University of Technology, *Harry Ballard*, Cape Peninsula University of Technology, **South Africa**

Solid Waste Segregation Assessment through Activities of Environmental Education in a Municipality of Rio Grande do Sul State, Brazil, *Vania Elisabete Schneider*, Universidade de Caxias do Sul, *Verônica Casagrande*, Universidade de Caxias do Sul, *Sofia Helena Zanella Carra*, Universidade de Caxias do Sul, **Brazil**

Waste Recycling Practices in Countries in Asia, Europe, Africa and South America, *Sadhan Kumar Ghosh*, Jadavpur University, *Marisa Soares Borges*, Federal University of Parana, Brazil, *Sannidhya Kumar Ghosh*, University of Colorado Boulder, *Francesco Di Maria*, *Vanessa Cruvinel*, *Tomás Ramos*, *Shakinaz T. El-Sheltawi*, *M. K. Fouad*, *A. S. Aremu*, *O. M. Ojowuro*, *Chucheka Tivani*, *Yong-Chil Seo*, *Mervat El-Hoz*, **India**

Recycling of Polyethylene Terephthalate (PET) Waste Bottles in Sustainable Pavement Materials, *Pranshoo Solanki*, Illinois State University, *Md. Kaiser Ahmed*, Illinois State University, **USA**

Enhanced Anaerobic Digestion of Food Waste by Adding Activated Carbon: Fate of Bacterial Pathogens and Antibiotic Resistance Genes, *Jingxin Zhang*, National University of Singapore, *Kai-Chee Loh*, National University of Singapore, **Singapore**

TUESDAY, MARCH 21

8:00 a.m. - 5:30 p.m.

Conference check-in and registration

8:00 a.m. – 8:30 a.m.

Coffee

8:30 a.m. - 10:20 a.m.

Sessions 5

SESSION 5A

Policy and Public Involvement 2

Is the View of Gender Precariousness in Australia's Waste and Recycling Sector Justified?, *Georgina Davis*, The Waste to Opportunity Enterprise, **Australia**

Social Aspects of Solid Wastes Management in Curitiba: Green Exchange – A Success Case, *Marisa Soares Borges*, Federal University of Parana, *Flavia Soccol*, Pontifical Catholic University of Parana, *Marina C.R. Ballao*, Municipal Secretariat of Environment Curitiba City Hall, **Brazil**

Training Professional Drivers in Australia's Waste Management and Recycling Sector, *Keith Heavens*, TAFE Queensland SkillsTech, *Georgina Davis*, Griffith University, **Australia**

Environmental Education: An Advocacy of a Travel Agency in Davao City, Philippines, *Lilia Panchito*, Davao Merchant Marine Academy-College of Southern Philippines, *D'Artagnan Yambao*, Philippine Long Distance Telephone, *Shomae Lilli Panchito*, Agro Industrial Foundation College of the Philippines, *Ruben A. Neri*, *Elisa P. Madrazo*, *Jonathan Naraval*, **Philippines**

North America's First Independent Producer Responsibility Regime Set to Launch, *Jonathan Cocker*, Baker & McKenzie LLP, **Canada**

Solid Waste Segregation Assessment through Activities of Environmental Education in a Municipality of Rio Grande do Sul State, Brazil, *Vania Elisabete Schneider*, Universidade de Caxias do Sul, *Verônica Casagrande*, Universidade de Caxias do Sul, *Sofia Helena Zanella Carra*, Universidade de Caxias do Sul, **Brazil**

SESSION 5B

Biological Treatment 2

Exploration of Biodrying Process for Mixed Municipal Solid Waste Management, *Asha P. Tom*, Cochin University of Science and Technology, *Ajit Haridas*, National Institute of Interdisciplinary Science and Technology, Trivandrum, *Renu Pawels*, Cochin University of Science and Technology, **India**

Carbonization of Reed Plant in a Fluidized Bed Pyrolysis Reactor, *Bassim Abbassi*, University of Guelph, *Ramesh Rudra*, University of Guelph, *Kayla Schmidt*, University of Guelph, *Faisal Shahin*, **Canada**

A Hybrid Biological and Thermal Waste-to-Energy System for Solid Organic Waste Treatment: Heat Energy Recovery and Utilization, *Jingxin Zhang*, National University of Singapore, *Kai-Chee Loh*, National University of Singapore, **Singapore**

Utilization of Co-Products of Enzyme-Assisted Aqueous Extraction of Soybeans for Corn Fermentation, *Jasreen Sekhon*, Drexel University, *Tong Wang*, Iowa State University, *Stephanie Jung*, California Polytechnic State University, *Kurt Rosentrater*, **USA**

SESSION 5C

Facility Siting and Planning

Interval Optimization Approach for Municipal Solid Waste Management Systems, *Vinay Yadav*, Indian Institute of Technology Bombay, *Ajay Kumar Bhurjee*, National Institute of Science and Technology Berhampur, *Subhankar Karmakar*, Indian Institute of Technology Bombay, *A. K. Dikshit*, **India**

Landfill Site Selection Using Multi Criteria Decision Analysis - A Case Study for Gulshan-E-Iqbal Town, Karachi Pakistan, *Saad Malik*, Institute of Space Technology, *Javeria Gabriel Arain*, Institute of Space Technology, **Pakistan**

Integrated Waste Management Systems for Developing Economies, *Lakshmi Raghupathy*, TERI University, **India**

SESSION 5D

Environmental and Health Impacts

Impact of Composting and Landfill Emissions on Climate Change, *Sutripta Sarkar*, Barrackpore Rastraguru Surendranath College, *Sadhan Kumar Ghosh*, Jadavpur University, **India**

Human Exposure of Chemicals Released from Plastic during Reuse and Recycling: Mixture Toxicity Issues and Challenges, *Tanushree Parsai*, Indian Institute of Technology Delhi, *Arun Kumar*, Indian Institute of Technology Delhi, **India**

Systematic Quantification of GHG Emissions Inventory Using USEPA Mandatory Reporting Rules Methodology: A Case Study of Cedar Hills Regional Landfill, King County, WA, *Mizanur Rahman*, King County Solid Waste Division, *Toraj Ghofrani*, King County Solid Waste Division, **USA**

Use of Collagen Nanofibrils to Clarify Turbid Water, *Gennaro Maffia*, Manhattan College, *Amanda Belluccio*, Manhattan College, *Nicole Aylmer*, Manhattan College, **USA**

Decentralised Utilization of Urban Biomass Waste and Solar Energy for Cooling System - A Proposed Model, *Rahul Baidya*, Institute of Engineering & Management, *Tapabrata Bhattacharya*, Institute of Engineering & Management, *Sadhan Kumar Ghosh*, Jadavpur University, **India**

Sustainability Analysis of Green Computing Alternatives Using AHP and QFD, *Biswajit Debnath*, Jadavpur University, *Reshma Roychoudhuri*, Heritage Institute of Technology, *Sadhan K. Ghosh*, Jadavpur University, **India**

10:20 a.m. – 10:50 a.m.

Break

10:50 a.m. – 12:35 p.m.

Sessions 6

SESSION 6A

Waste Business Analyses

Analysis of Barriers to Recyclable Market Development with the Inclusion of Waste Picker Organizations from Espirito Santo/Brazil: Scenarios for Appreciation, *Renato Ribeiro Siman*, Federal University of Espirito Santo, *Renato Meira de Souza Dutra*, Federal University of Espirito Santo, *Luciana Harue Yamane*, Federal University of Espirito Santo, **Brasil**

Occupational Dysfunction in Creating Value Proposition for Waste Pickers Organizations in Espirito Santo/Brazil, *Renato Ribeiro Siman*, Federal University of Espirito Santo, *Juliana Pardinho Tackla*, Federal University of Espirito Santo, *Roquemar de Lima Baldam*, Federal University of Espirito Santo, *Luciana Harue Yamane*, **Brasil**

Novel Approach for Laptop and Cell Phone Waste Management Using Cloud Based Data Storage Systems, *Ipsita Saha*, Guru Nanak Institute of Technology, *Sadhan K. Ghosh*, Jadavpur University, *Amit Kundu*, Tchno India, **India**

Luminescent Codes to Identify Composition and Usage, *Jack Silver*, Brunel University London, *Karnik Tarverdi*, Brunel University London, *Paul Harris*, Brunel University London, *George Fern*, *Ed Kosior*, *Martin Kay*, *Jon Mitchell*, **United Kingdom**

SESSION 6B

Waste Management in Developing Areas

Waste Recycling: What Do Nigerian Prospective Teachers Know, Do and Feel?, *Ayodeji Ifegbesan*, University of Johannesburg, *Isaac T. Rampedi*, University of Johannesburg, **South Africa**

Exploitation of Energy Potential of Municipal Solid Waste in Low Income Economies in Sub-Saharan Africa, *Asinyetogha Hilkieh Igoni*, Rivers State University of Science and Technology, *Ibiye Sepiribo Kingnana Harry*, Rivers State University of Science and Technology, **Nigeria**

Characteristics and Management of Domestic Waste in Rural Area of China, *Zhiyong Han*, State Key Laboratory of Geohazard Prevention and Geoenvironment Protection (Chengdu University of Technology), *Guozhong Shi*, Biogas Institute of Ministry of Agriculture, *Zeng Dan*, Science School of Tibet University, **China**

Waste Management in Developing Nations: Challenges and Opportunities, *Olufemi Oyedele*, Government of the State of Osun, *Oluwaseun Ajala*, Federal Road Service Corps, **Nigeria**

SESSION 6C

Use of Wastes in Construction 2

Pervious Concrete Pavement: An Ecofriendly Solution, *Marleisa Arocho-Irizarry*, University of Puerto Rico at Mayagüez, *Sangchul Hwang*, University of Puerto Rico at Mayagüez, **Puerto Rico**

Evaluation of Partial Replacement of Calcium Carbide Residue with Cement on Compressive Strength of Concrete: Implication for Waste to Wealth, *Olubunmi Ajike Mokuolu*, University of Ilorin, *Bolarinwa Olaniyi*, University of Ilorin, **Nigeria**

Phosphorus Recovery from Storm Water Runoff with Fly Ash-Added Pervious Concrete, *Vincent Hwang*, Southwestern Educational Society, *Sangchul Hwang*, University of Puerto Rico at Mayagüez, **Puerto Rico**

Economic Potential of Gold Tailings Dams: A Case Study of the Klein Letaba Tailings Dam, Limpopo Province, South Africa, *Ndivhuwo Nemapate*, University of Venda, *Jason Ogola*, University of Venda, *George Ekosse*, University of Venda, **South Africa**

SESSION 6D
Special Session on Pyrolysis

Economic Review of Targeted Biochar Production and Application: A First Step towards a Societal Techno-Economic Analysis, *Tom Emile Kuppens*, Hasselt University, *Ann Cuypers*, Hasselt University, *Marijke Jozefczak*, *Robert Carleer*, *Nele Witters*, *Robert Malina*, **Belgium**

Carbon Negative Energy via the Fast Pyrolysis to Fuels and Bioproducts Platform, *Mark Mba Wright*, Iowa State University, *Wenqin Li*, Iowa State University, **USA**

Kinetics of Pyrolysis of Mixed Municipal Solid Waste, *Vibhuti Chhabra*, Monash University; Indian Institute of Technology, Bombay, *Yogendra Shastri*, Indian Institute of Technology, Bombay, *Sankar Bhattacharya*, Monash University, **Australia**

12:35 p.m. – 1:35 p.m.

Poster Session 2

POSTER SESSION 2

Environmental Education: An Advocacy of a Travel Agency in Davao City, Philippines, *Lilia Panchito*, Davao Merchant Marine Academy-Colloge of Southern Philippines, *D'Artagnan Yambao*, Philippine Long Distance Telephone, *Shomae Lilli Panchito*, Agro Industrial Foundation College of the Philippines, *Ruben A. Neri*, *Elisa P. Madrazo*, *Jonathan Naraval*, **Philippines**

Healthcare Waste Generation and Management in Public Healthcare Facilities in Adama, Ethiopia, *Samuel Fekadu Hayleeyesus*, Jimma University, *Wondemagegn Cherinete*, **Ethiopia**

Contributing to a Sustainable Packaging Waste Management under a Circular Economy Approach: The Case Study of the Canned Anchovy Sector, *Jara Laso*, University of Cantabria, *Maria Margallo*, University of Cantabria, **Spain**

From a Linear to a Circular Economy: Environmental Concerns of Recycling Bottom and Fly Ashes from Municipal Solid Waste Incineration, *Maria Margallo*, University of Cantabria, **Spain**

Designing of Fly-Ash Reinforced Waste Plastic Composite Tiles for Societal Usage, *Ridham Dhawan*, CSIR - National Physical Laboratory, *Sundeep Kumar Dhawan*, CSIR - National Physical Laboratory, **India**

Integrated Sustainable Waste Management for Santiago de Chile and Inclusion of the Informal Sector, *Fernanda Cabanas*, Columbia University, *Athanasios Bourtsalas*, Columbia University, *Alex Godoy-Faundez*, Universidad del Desarrollo, **USA**

Estimation of the Energy Recovery Potential of Discarded Recyclable Solid Waste (Santo André, SP, Brazil), *Rodolfo Sbrolini Tiburcio*, Universidade Federal do ABC, Centro de Engenharia, Modelagem e Ciências Sociais Aplicadas, *Mauro Malpeli Junior*, Universidade Federal do ABC, Centro de Engenharia, Modelagem e Ciências Sociais Aplicadas, *Andrea Carolina Gutierrez Gomez*, Universidade Federal do ABC, Centro de Engenharia, Modelagem e Ciências Sociais Aplicadas, *Juliana Tófano de Campos Leite Toneli*, *Ana Maria Pereira Neto*, **Brazil**

Influence of Municipal Solid Waste Physical Composition in the Energy Potential of the Combustible Fraction of Wet Waste in Santo André City, SP, Brazil, *Andrea Carolina Gutierrez Gomez*, Universidade Federal do ABC, Centro de Engenharia, Modelagem e Ciências Sociais Aplicadas, *Renata Almeida*, Universidade Federal do ABC, Centro de Engenharia, Modelagem e Ciências Sociais Aplicadas, *Rodolfo Sbrolini Tiburcio*, Universidade Federal do ABC, Centro de Engenharia, Modelagem e Ciências Sociais Aplicadas, *Mauro Malpeli*, *Juliana Tófano dos Campos Leite Toneli*, *Gilberto Martins*, *Ana Maria Pereira Neto*, **Brazil**

Synergetic Incorporation of Granite Waste and Coffee Husk Ash in Clay-Based Products, *Wilson Acchar*, Federal University of Rio Grande do Norte, *Keite Avelino*, Federal University of Rio Grande do Norte, **Brazil**

Evaluation of Asphalt Mixtures Using Red Mud as a Filler, *Liseane Padilha Thives*, Federal University of Santa Catarina, *Mayara Lima*, Federal University of Santa Catarina, *Glicério Trichês*, Federal University of Santa Catarina, **Brazil**

Waste Tires: Reverse Logistics in Brazil, *Liseane Padilha Thives*, Federal University of Santa Catarina, *Gabriel Dibe Andrade*, Federal University of Santa Catarina, *Thiago Romeu Antunes*, Federal University of Santa Catarina, *Claudio Zimmermann*, **Brazil**

A Novel Iron Carbonate Binder that Recycles Steel Dust, Crushed Glass, and Carbon Dioxide, *David Stone*, Iron Shell LLC, Tohono O'odham Community College, *Sumanta Das*, University of Rhode Island, *Leonid Frayman*, Allegheny Coatings, **USA**

The Formation of Inorganic Fouling Scales on RO Membrane in a Landfill Leachate Treatment System, *Xiaolan Zeng*, Chongqing University, *Yongzhou Huang*, Chongqing University, *Wenchuan Ding*, Chongqing University, *Kunyu Li*, **China**

Partial Nitrification and Denitrification of Mature Landfill Leachate Using a Pilot-Scale Continuous Activated Sludge Process at Low Dissolved Oxygen, *Zhenguo Chen*, South China University of Technology, *Xiaojun Wang*, South China University of Technology, *Yongyuan Yang*, South China University of Technology, *Markus W. Mirino Jr.*, **P. R. China**

Biogas as a Strategic Resource on Renewable Energies in South Brazil, *Marisa Soares Borges*, Federal University of Parana, *Marcelo Alves de Sousa*, Parque Tecnológico Itaipu, *Janaina Camile Pasqual*, Parque Tecnológico Itaipu, *Iara B.R. Rosa*, *Driely Rosa*, **Brazil**

Anaerobic Co-Digestion of Solid Organic Waste and Manure of Farm Animals for Biogas Production, *Osiris Cuevas*, UNICACH, *Azalia Salazar*, UPEMOR, *Ricardo Justo*, UPEMOR, *Goevanni Mulato*, *Fidel Aguilar*, *Joel Moreira*, *P.J. Sebastian*, **México**

Study of Slow Release of Urea Supported on Straw Biochars, *Marco Figueiredo*, Universidade do Estado do Rio de Janeiro, *Luana Ventura*, Universidade do Estado do Rio de Janeiro, *Ana Carvalho*, Faculdade de Ciências da Universidade de Lisboa, *Wallace Souza*, *Fabio da Silva*, *Mariene Maciel*, **Brazil**

SESSION 7A
Landfill 3

The Formation of Inorganic Fouling Scales on RO Membrane in a Landfill Leachate Treatment System, *Xiaolan Zeng*, Chongqing University, *Yongzhou Huang*, Chongqing University, *Wenchuan Ding*, Chongqing University, *Kunyu Li*, **China**

Advanced Treatment of Landfill Leachate by Chemical Oxidation - Biological Aerated Filter Processes, *Xiaojun Wang*, South China University of Technology, *Xiaoyang Gu*, Hualu Environmental Technology Co., Ltd., *Zhenguo Chen*, South China University of Technology, **P. R. China**

Application of Membrane Technology to Treat Landfill Leachate, *Thomas Pullar*, EarthRes Group, Inc., **USA**

Comparing Different Options for Leachate Treatment in a Life Cycle Perspective, *Francesco Di Maria*, Università di Perugia, *Federico Sisani*, Università di Perugia, **Italia**

Characteristics of Organic Scales on RO Membrane from MSW Leachate Treatment Systems, *Xiaolan Zeng*, Chongqing University, *Yujia Yao*, Chongqing University, *Wenchuan Ding*, Chongqing University, *Kunyu Li*, **China**

SESSION 7B
Recycled Materials

Integrating Solid Waste Management and Transportation Safety with Pervious Concrete Bicycle Path, *Carla Moreno Cortés*, University of Puerto Rico, Mayaguez Campus, *Alesandra Morales Vélez*, University of Puerto Rico, Mayaguez Campus, *Enrique González Vélez*, University of Puerto Rico, Mayaguez Campus, *Sangchul Hwang*, **Puerto Rico**

Comprehensive Utilization of Chlor-Alkali Industry Salt Sludge, *Jeng-Ywan Shih*, Ming Chi University of Technology, *Kuan-Chun Chiu*, Ming Chi University of Technology, *Zhi-Run Chen*, Ming Chi University of Technology, **Taiwan**

A Novel Iron Carbonate Binder that Recycles Steel Dust, Crushed Glass, and Carbon Dioxide, *David Stone*, Iron Shell LLC, Tohono O'odham Community College, *Sumanta Das*, University of Rhode Island, *Leonid Frayman*, Allegheny Coatings, **USA**

SESSION 7C
Chemical Treatment Advances 2

Control of Pore Size and Morphology in Artificial Tissue Made from Waste Corium, *Gennaro Maffia*, Manhattan College, *Olivia Mason*, Manhattan College, **USA**

Reuse of Waste Plastics, *Gennaro Maffia*, Manhattan College, *Olivia Mason*, Manhattan College, *Marissa Kaplan*, Manhattan College, **USA**

Catalysis of Biodiesel Production Processes Using Phosphate Rock: Parametric and Optimization Study, *Hassan El Shimi*, Cairo University, *Shakinaz El Sheltawy*, Cairo University, **Egypt**

SESSION 7D
Agricultural Wastes 3

Comparative Assessment of Toxic Residues on *Clarias gariepinus* Smoked with Coal and Biochar-Loaded Kilns, *Oluseun Motunrayo Osineye*, Federal College of Fisheries and Marine Technology, *Bethel Jahnezim*, Federal College of Fisheries and Marine Technology, **Nigeria**

A New Approach of Increasing the Output Performances of Pathor Kuchi Leaf (PKL) Electrochemical Cell, *Md. Mostofa Kamal*, Brahmanbaria City Model College, *Md. Kamrul Alam Khan*, Jagannath University of Bangladesh, *Md. Abdul Latif*, Dhaka WASA, *Md. Abdulla Al-Mamon*, **Bangladesh**

Studies on Organic Fertilizer as a Solid Waste from Myrobalan during Electricity Generation, *A. K. M. Obaydullah*, Upazilla Resource Centre, *Md. Kamrul Alam Khan*, Jagannath University, **Bangladesh**

Closing the Plastics Loop: A Case Study Review from Queensland, Australia, *Georgina Davis*, Queensland Farmers' Federation, **Australia**

5:00 p.m. – 6:00 p.m.
Closing Reception

WEDNESDAY MARCH 22

8:00 a.m. – 9:00 a.m.
Conference check-in and registration

8:00 a.m. – 9:00 a.m.
Coffee

9:00a.m. – 2:00 p.m.
Technical Field Trips (choose 1)

FIELD TRIP 1 – Environmental Landfill and Recycling

Delaware Solid Waste Authority Cherry Island Landfill

The Cherry Island Landfill is a municipal solid waste landfill located in Wilmington, Delaware. The site recently underwent a major landfill expansion. The expansion project included the successful design and construction of an 8,000-ft (1.5 mile) long, 60-ft high mechanically stabilized earth (MSE) berm over extremely soft river-dredge material. The site is located at the confluence of the Delaware and Christina Rivers. The

completion of this landfill expansion project represents a significant engineering achievement considering the size of the MSE berm and the deep layer of very soft soils over which the berm was constructed. The berm consists of 1.5 million cubic meters of fill and is one of the highest and most massive reinforced structures constructed over soft soils ever built in the United States. By completing this berm the capacity of the landfill to received waste was increased by an estimated 50 years. This pioneering project was selected as a finalist for the 2012 Outstanding Civil Engineering Achievement (OCEA) award by the American Society of Civil Engineers.

The Cherry Island Landfill manages approximately 1,200 tons of solid waste per day and operates four (4) unique handling areas. The state-of-the-art operation utilizes recovered resources for all operational needs such as landfill cover and access road construction. Zero virgin materials are imported for operational purposes. The landfill collects and processes approximately 3,000 scfm of landfill gas for the generation of green power. The landfill also operates a recycling area which removes materials such as metals, tires, drywall, and yard waste from the solid waste stream.

FIELD TRIP 2 - Waste Management at the Largest Shopping Mall in the U.S.A.

King of Prussia Mall

The King of Prussia Mall is the largest shopping mall in the United States in terms of leasable space. Covering 270,000 m² (2,900,000 ft²) with more than 240 stores and restaurants, walking every corridor and every isle of King of Prussia Mall would be the equivalent of walking across Manhattan. This field trip will examine the waste management and recycling operations at the mall, followed by an opportunity to enjoy the shopping.