

**2018 - Contaminated Site Management in Europe:
Sustainable Remediation and Management of Soil,
Sediment and Water
(CSME-2018)**

**2018 - Oxidation and Reduction Technologies for
Treatment of Soil and Groundwater
(EORTs-2018)**

FINAL PROGRAM

Sponsors



**University of Lorraine, Nancy, France
October 22-25, 2018**

Conference Chair

Professor Marie-Odile Simonnot, University of Lorraine, Nancy, France

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Daniel F. Schneider, Terracon, USA

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Robert Sweeney, Environmental and Petroleum Geochemistry, USA

Yann Thomas, Microhumus, France

Cristina Valhondo, Spanish National Research Council, Spain

Gerben van den Berg, TENCATE GEOSYNTICS NETHERLANDS BV, The Netherlands

MONDAY, OCTOBER 22, 2018

Session 1 : In-Situ Chemical Oxidation

Session Chairs: Marie-Odile Simonnot & Pierre Faure

- 13:30 – 13:55 **Ferrate (VI) Oxidation: A New Challenge for Remediation of PCB Contaminated Soil**
Olivier Monfort, Khalil Hanna
Univ Rennes, Ecole Nationale Supérieure de Chimie de Rennes, CNRS, ISCR, UMR 6226, Rennes, France
- 13:55 – 14:20 **Kinetics of Chemical Oxidation of Decane Using Activated Persulfate by Ferrous Iron: Which Impact on Electrical Resistivity Signal?**
Tamara Maury, Michel Franceschi, Myriam Schmutz, Grégory Cohen and Caroline Hobard
EA 4592 Géoressources et Environnement, Bordeaux INP-UBM, Bordeaux, France
- 14:20 – 14:45 **Oxidation of PAHs and their By-products (Polar PACs) in the Saturated Zone of DNAPL-contaminated Sub-soils**
Clotilde Johansson and Antoine Joubert
SERPOL, Vénissieux, France
Pierre Faure and Coralie Biache
Université de Lorraine, CNRS, LIEC, Vandœuvre-lès-Nancy, France
Philippe Bataillard and Stéfan Colombano
Bureau de Recherches Géologiques et Minières (BRGM), Orléans, France
Catherine Lorgeoux
Université de Lorraine, CNRS, CREGU, GeoRessources, Vandœuvre-lès-Nancy, France
Thierry Pigot
Université de Pau, IPREM, Pau Cedex 09, France
- 14:45 – 15:10 **Iron Minerals as Catalytic Activators for Persulfate: Performance and Mechanistic Studies**
Sarah Suehnholz, Katrin Mackenzie and Frank-Dieter Kopinke
Helmholtz-Center for Environmental Research - UFZ, Leipzig, Germany
- 15:10 – 15:40 **Coffee Break**

Session 2: In-Situ Chemical Oxidation & In-Situ Chemical Reduction

Session Chairs: Pierre Faure & Karen Mackenzie

- 15:40 – 16:05 **Selective Degradation of PHE and Regeneration with Advanced Oxidation Technology in Soil Washing**
Zenan Wang
Hubei Biomass-Resource Chemistry and Environmental Biotechnology Key Laboratory, Wuhan University, China
- 16:05 – 16:30 **Which Reaction Pathway Is Responsible for Non-Radical Persulfate Activation, Singlet Oxygenation or Mediated Electron Transfer?**
Eun-Tae Yun, Jaesung Kim, and Jaesang Lee*
Korea University, Seoul, Korea
- 16:30 – 16:55 **The Impact of SR-ISCO on Bioremediation of Chlorinated Ethenes**
L. Honetschlägerová, R. Škarohlíd, M. Martimec, M. Serna
University of Chemistry and Technology, Prague, Czech Republic
- 16:55 – 17:20 **Chlordecone Soil Contaminant Removal by ISCR Technology: Effect of Soil Type**
M. C. Dictor, C. Mouvet
BRGM, Orléans, France
- 17:20 – 17:45 **Treating Contamination through Nanoremediation: The TANIA Project**
Marie-Odile Simonnot¹, Noële Enjelvin², Carine Vuidel³, Christophe Chêne⁴, Jean Louis Morel²
¹ University of Lorraine-CNRS, LRGP, Nancy, France
² University of Lorraine-INRA, Laboratoire Sols et Environnement, Nancy, France
³ Conseil Régional, Région Grand Est, Metz, France
⁴ Soléo Services company, Meyzieux, France

TUESDAY, OCTOBER 23, 2018

Session 3: Remediation of Groundwater and Sediment

Session Chairs: Douglas D. Carvel* & Jennifer Hellal (* To be confirmed)

- 9:00 – 9:25 **Passive Flux Measurement in Groundwater: The Future Way of Spreading Risk Assessment and Remediation Cost Reduction**
Goedele Verreydt^{1,2}, Tim Op 't Eyndt², Patrick Meire¹, Jan Bronders³, Piet Seuntjens^{3,4}
¹ University of Antwerp, Wilrijk, Belgium
² iFLUX, Niel, Belgium
³ VITO, Mol, Belgium
⁴ Ghent University, Gent, Belgium
- 9:25 – 9:50 **Technical Solution for the Removal of PFAS in Water**
Jurgen Buhl
Cornelsen Umwelttechnologie GmbH, Essen, Germany
- 9:50 – 10:15 **Contaminated Sediments: A Matter Best Buried**
Gerben van den Berg
TenCate Geosynthetics Netherlands B.V.
- 10:15 – 10:45 **Coffee Break**
- 10:45 – 11:10 **Combination of Sorption and Reaction for Removal of Trace-Level Groundwater Contaminants**
Katrin Mackenzie, Anett Georgi
Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany
- 11:10 – 11:35 **The Role of the Vegetation on Pollutants Mobility in Urban Sediment**
Jean-Philippe Bedell
UMR 5023, LEHNA-IPE, U. Lyon/ENTPE, Vaulx-en-velin cedex, France
- 11:35 – 12:00 **Reactive Barriers to Accelerate Water Quality Improvements during Artificial Recharge of Aquifers**
Cristina Valhondo, Jesús Carrera, Lurdes Martínez-Landa, Silvia Diaz-Cruz
Spanish National Research Council CSIC, Institute of Environmental Assessment and Water Research, Spain
- 12:00 – 13:30 **Lunch**

Session 4: Risk Assessment

Session Chairs: Maria Larsson & Irene Jubany

13:30 – 13:55 **Assessment of the Bioavailability of Metals in Soils through Ingestion and Inhalation Pathways**

Irene Jubany¹, **Matthias Monneron**², **Sandra Casas**¹, **Neus Bahí**¹, **M. Teresa Condesso de Melo**², **Nuno Barreiras**², **Emmanuel Joussein**³, **Marilyne Soubrand**³

¹ CTM Centre Tecnològic, Manresa, Spain

² PEIRENE, EA 7500, University of Limoges, France

³ CERIS, IST, Lisboa, Portugal

13:55 – 14:20 **Ecological Risk Assessment – Case Studies Application of the Soil Quality TRIAD Approach (Second Phase)**

Nicolas Pucheux, **Lucie Roux**, **Pascal Pandard**, **Sandrine Andres**
INERIS, Verneuil-en-Halatte, France

14:20 – 14:45 **The Use of Earthworms as a Bioindicator and One Element for Assessing the Environmental Risk of Transfer of Pollutants in a Terrestrial Ecosystem**

Jean-Philippe Bedell

UMR 5023, LEHNA-IPE, U. Lyon/ENTPE, ENTPE, Vaulx-en-velin cedex

Session 5: Managing Complex's Sites

Session Chairs: Daniel Schneider & Douglas D. Carvel* (* DDC to be confirmed)

14:45 – 15:10 **Towards a Less Stringent Groundwater Body Objective? Feedback from a French Heavily Industrial and Urban Study Area**

C. Merly^{1,2}, **M. Grémont**³, **P. Vigouroux**³, **M Bouzit**³, **B. Clozel**¹, **L. Cadilhac**³, **C. Schlosser**⁴

¹ BRGM, 151 Bd Stalingrad, Orléans, France

² BRGM, Direction Régionale Auvergne Rhône Alpes, Villeurbanne, France

³ BRGM, D3E, NRE, Montpellier, France

⁴ Agence de l'Eau Rhône Méditerranée Corse, Lyon, France

15:10 – 15:40 **Coffee Break**

15:40 – 16:05 **Sophisticated In-Situ-Technologies to Address Contaminants in Complex Geological Structures – Remediation in Fractured Bedrock and Layered Aquifers**

Stephan Huettmann

Sensatec GmbH, Germany

- 16:05 -16:30 **Interstate Technology and Regulatory Council (ITRC) –
Managing Complex Sites**
Dan Schneider
Site Investigation and Remediation, Terracon Consultants, USA
- 16:30 – 16:55 **A Step by Step Approach for a Complex DNAPL Remediation
in Brazil**
**Victor Vanin Sewaybricker, Norbert Brandsch, Rubens Spina, André
Luis de Souza and Mychelle Nunes de Paula**
GEOKLOCK, São Paulo, SP, Brazil
- 16:55 – 17:20 **Targeted Solids Emplacement (TSE) for In-Situ Chemical
Oxidation of Contaminants in Low Permeability Soils and Bedrock**
Gordon Bures and Stephan Huettmann
Sensatec GmbH, Germany
- 17:20 – 17:45 **Novel and Optimized Approaches for Rapid NAPL Removal**
Douglas D. Carvel
MEC^X Inc., Houston, TX, USA
- 17:45 – 18:10 **Hydrogeological Tidal Effect and LNAPL Behavior Under the
Former Refinery at Petit-Couronne**
**Théo De Clercq^{1,2}, Abderrahim Jardani¹, Laurent Thannberger²,
Jean Paul Dupont¹**
¹ M2C Rouen, France
² VALGO, France
- 19:30 – 21:30 **Gala Dinner**

WEDNESDAY, OCTOBER 24, 2018

Session 6: Transport

Session Chairs: Edvina Lamy & Marie-Odile Simonnot

- 8:35 – 9:00 **Presentation of the GISFI Scientific Group**
**Noële Enjelvin¹, Pierre Faure², Corinne Leyval³, Jean Louis Morel¹,
Christophe Schwartz¹, Marie-Odile Simonnot³**
¹ LSE, University of Lorraine – INRA, Nancy, France
² LIEC, University of Lorraine – CNRS, Nancy, France
³ LRGP, University of Lorraine – CNRS, Nancy, France

9:00 – 9:25 **Polar PAC (Polycyclic Aromatic Compound) Mobilization and Transfer in Water from Coal Tar Contaminated Soils: From Batch to Lysimeter Column Experiments**
Marine Boulangé^{1,2,3}, Catherine Lorgeoux², Coralie Biache¹, Julien Michel³, Raymond Michels², Pierre Faure¹
¹ Université de Lorraine, CNRS, LIEC, Nancy, France
² Université de Lorraine, CNRS, CREGU, Vandœuvre-lès-Nancy, France
³ INERIS, Direction des Risques Chroniques, Verneuil en Halatte,, France

9:25 – 9:50 **Understanding the Mechanisms of Bacteria Transport and Deposition in Porous Media for Soil Remediation Purposes**
Hongjuan Bai², and Edvina Lamy^{1*}
¹ Sorbonne Université, Université de Technologie de Compiègne, France
² Henan University of Technology, PR China

9:50 – 10:15 **Weighable Lysimeters – A Perfect Tool to Observe Phytoremediation Processes in Undisturbed Soil Columns**
Sascha Reth^{1,2}, Katja Felsmann², Manfred Seyfarth²
¹ Umwelt-Geräte-Technik GmbH, Freising- Weihenstephan, Germany
² Umwelt-Geräte-Technik GmbH, head office, Müncheberg, Germany

10:15 – 10:45 **Coffee Break**

Session 7: Phytomanagement – Valuation

Session Chairs: Guillaume Echevarria* & Valerie Bert* (*To be confirmed)

10:45 – 11:10 **LIFE AGROMINE: A European Demonstration Project for Ni Agromining**
G. Echevarria^{1*}, A. Bani², E. Benizri¹, P. Kidd³, J. Kisser⁴, M. Konstantinou⁵, T. Kuppens⁶, D. Kyrkas⁵, B. Laubie⁷, G. Machinet⁸, J. L. Morel¹, E. Nodot¹, M. N. Pons⁶, M. Puschenreiter⁹, M. O. Simonnot⁶, A. Tognacchini^{4,9}, N. Witters⁶
¹ Université de Lorraine-INRA, LSE, BP 20163, 54505 Vandœuvre, France.
² Agricultural University of Tirana, Tirana, Albania
³ CSIC-IIAG, Santiago de Compostela, Spain
⁴ Alchemia-nova, Vienna, Austria
⁵ EMATTECH, Kavala, Greece
⁶ Universiteit Hasselt, Diepenbeek, Belgium
⁷ CNRS-Université de Lorraine, Nancy, France
⁸ Microhumus, Vandœuvre, France
⁹ BOKU- Institute of Soil Research (IBF), Tulln, Austria

- 11:10 – 11:35 **Phytoextraction as an Option for Zn-Rich Biomass Valuation by Ecocatalysis**
Valérie Bert¹, A. Grignet¹, H. Coudière², C. Grison³ and R. Gaucher¹
¹ Clean and Sustainable technologies and Processes Unit, INERIS, France
² Communauté de l'Agglomération Creilloise, Direction des Services Techniques, France
³ Laboratoire de Chimie bio-inspirée et d'Innovations écologiques, FRE 3673 CNRS – UM Cap Delta, France
- 11:35 – 12:00 **Different Strategies to Recover Nickel from Hyperaccumulator Plants**
Baptiste Laubie¹, Guillaume Echevarria², Emile Benizri², Jean Louis Morel², Marie-Odile Simonnot¹
¹ University of Lorraine-CNRS, LRGP, Nancy, France
² University of Lorraine-INRA, Laboratoire Sols et Environnement, Nancy, France
- 12:00 – 13:30 **Lunch**
- 13:30 – 13:55 **Cu Recovery from Polluted Soil**
Karin Karlfeldt Fedje^{1,2}
¹ Chalmers University of Technology, Gothenburg, Sweden
² Recycling and Waste Management, Renova AB, Gothenburg, Sweden
- 13:55 – 14:20 **The LORVER Chain: Phytomanagement and Downstream Processes: What's Next?**
Marie-Odile Simonnot¹, Sophie Guimont², Gaëtan Fourvel², Jean Louis Morel³
¹ University of Lorraine-CNRS, LRGP, Nancy, France
² Valterra Dépollution Réhabilitation, Colombe, France
³ University of Lorraine-INRA, Laboratoire Sols et Environnement, Nancy, France
- 14:20 – 14:45 **Soil Engineering and Circular Economy in a Land Planning Project**
Léa Leclercq, Jeanne Maréchal, Xavier Marié
Sol Paysage, Strasbourg, France
- 14:45 – 15:10 **Pedological Engineering and Phytomanagment Applied to Soils Made of Steel Sludge**
Yann Thomas*, Gaylord Erwan Machinet, Geneviève Villemin, Marina Bouchut, Jean-Christophe Renat
Microhumus, Jarville la Malgrange, France
- 15:10 – 15:40 **Coffee Break**

Session 8: Bioremediation

Session Chairs: Vladimir Jirku & Yoan Pechaud

- 15:40 – 16:05 **Rhamnolipids for Biosurfactant - Amended Bioremediation**
Vladimir Jirku¹, Richard Jezdik¹, Vojtech Stepanek, Jan Masak¹ and Tomas Rezanka²
¹ University of Chemical Technology, Prague, Czech Republic
² Institute of Microbiology, Academy of Sciences of the Czech Republic
- 16:05 – 16:30 **Remediation of TPH Contaminated Sludge: Biotreatment Enhanced by Rhizodegradation**
Anouk Barrere, Nathalie Montigny, Julie Estival, Sébastien Kaskassian
Tauw, France
- 16:30 – 16:55 **Experimental Analysis and Modelling of Bioslurry Reactor Treating PAHs Contaminated Soil: An Overview**
Douglas O. Pino-Herrera¹, Yannick Fayolle³, Eric D. van Hullebusch^{1,4}, David Huguenot¹, Giovanni Esposito², Mehmet A. Oturan¹, Yoan Pechaud¹
¹ Université Paris-Est, LGE, EA 4506, Marne-la-Vallée, France
² University of Cassino and Southern Lazio, Cassino, Italy
³ Irstea, UR HBAN, 1 Rue Pierre-Gilles de Gennes, Antony, France
⁴ UNESCO-IHE Institute for Water Education, Delft, The Netherlands
- 16:55 – 17:20 **From Biodegradation of Organic Pollutants in Soils by Saprotrophic Fungi ... to Bioremediation**
Catherine Rafin and Etienne Veignie
Université du Littoral Côte d'Opale, Dunkerque, France
- 17:20 - 17:45 **Characterisation of PAHs and Polar PACs at Contaminated Sites – Combining in Vitro Reporter Gene Assay and Chemical Analysis**
Maria Larsson¹, Monika Lam¹, Patrick van Hees^{1,2} and Magnus Engwall¹
¹ Örebro University, Örebro, Sweden
² Eurofins Environment Testing Sweden AB, Lidköping, Sweden
- 17:45 – 18:00 **Harmonic Pumping Test Applied to Characterize the Heterogeneity of Hydraulic Properties of a Contaminated Aquifer**
Théo De Clercq^{1,2}, Abderrahim Jardani¹, Laurent Thannberger², Jean Paul Dupont¹
¹ M2C Rouen
² VALGO

THURSDAY, OCTOBER 25, 2018

Session 9: Innovative and Practical Approaches for Remediation

Session Chairs: Daniel Schneider & Maria Larsson

- 9:00 – 9:25 **Cost Effective Approach to Quantify Natural Attenuation and Natural Source Zone Depletion**
Robert E. Sweeney
EPG, Etna CA, USA
- 9:25 – 9:50 **Environmental Innovation – When We Ask What If...?**
Dan Schneider
Site Investigation and Remediation, Terracon Consultants, USA
- 9:50 – 10:15 **Optimized Approach for the Removal of Tar Oil (DNAPL)**
Jurgen Buhl
Cornelsen Umwelttechnologie GmbH, Essen, Germany
- 10:15 – 10:45 **Coffee Break**
- 10:45 – 11:10 **Brief Approach on Remediation and Evaluation of the Vapor Intrusion Scenario- Case Study at a Factory Contaminated by Chloroethenes in Brazil**
Marcos Sillos, Silvia Cremonez Nascimento, Sergio Shigueo Kurozawa, Silvia Mara Alvarez, and Flávio Lima dos Santos
VERT Group, São Paulo – Brazil
- 11:10 – 11:35 **EBR^{patented} as an Advanced Environmental Technology Incorporating Various New Electrochemical Methods Underlying New Frontiers in Groundwater Remediation**
Philippe Oudin, Elie Elgressy, Gil Elgressy
E.Elgressy Ltd, France

Session 10: Modelling

Session Chairs: Mariem Kacem-Boureau & Chantal de Fouquet

- 11:35 – 12:00 **Investigation Tools to Build High Resolution Conceptual Site Models (HRCSM)**
Pieter Buffel, Martijn Naert, Samuel Van Herreweghe
EnISSA , Belgium

- 12:00 – 13:30 **Lunch**
- 13:30 – 13:55 **Geochemical Background Baselines in Urban Soils: Revisiting Statistical Criteria**
C. De Fouquet¹, C. Le Guern², B. Sauvaget^{1,2,3}, H. Roussel³
¹ Centre de géosciences, Mines Paris Tech, Fontainebleau, France
² BRGM, Direction régionale des Pays de la Loire, Nantes, France
³ Ademe, Angers, France
- 13:55 – 14:20 **Model Development For Soil Vapor Extraction and Multiphase Extraction Application**
Mariem Kacem¹, Daoud Esrael², Belkacem Benadda²
¹ Univ Lyon, LTDS UMR 5513 CNRS, Saint-Etienne, France
² DEEP, INSA -Lyon 20, Villeurbanne, France
- 14:20 – 14:45 **Calculating Geochemical Baseline in Urban Soils with Undedicated Datasets: Revisiting the Fundamentals**
B. Sauvaget^{1,2,3,4}, C. De Fouquet¹, C. Le Guern^{2,4}, H. Roussel³
¹ Centre de géosciences, Mines Paris Tech, Fontainebleau, France
² BRGM, Direction régionale des Pays de la Loire, Nantes, France
³ Ademe, Angers, France
⁴ IRSTV, Nantes, France

Session 11: Availability – Forensic

Session Chairs: Catherine Rafin & Jennifer Hellal

- 14:45 – 15:10 **Thermodesorption Coupled with Molecular Analyses as a New Approach to Estimate Bio- and Chemo-Availability of PAHs in Contaminated Soils**
Coralie Biache¹, Catherine Lorgeoux², Alain Saada³, Stéfan Colombano³, Pierre Faure¹
¹ Université de Lorraine, CNRS, LIEC, Nancy, France
² Université de Lorraine, CNRS, CREGU, GeoRessources, Nancy, France
³ BRGM, 3 avenue Claude Guillemin, Orléans, France
- 15:10 – 15:40 **Coffee Break**
- 15:40 – 16:05 **Environmental Forensics in Brownfields Affected by Concurrent Inorganic and Organic Pollution: Case Studies and Implications for Remediation**
José Luis R. Gallego
University of Oviedo, Mieres Asturias, Spain

16:05 – 16:30 **Microbial Molecular and Isotopic Biomarkers of Chloroethene (PCE, TCE, DCE, CV) Biodegradation to Evaluate Natural Attenuation Contaminated Plumes: Which Added Value?**
Jennifer Hellal^{1*}, Jérémie Denonfoux², Catherine Joulian¹, Louis Hermon^{1,3}, Stéphanie Ferreira², Stephane Vuilleumier³ and Gwenaël Imfeld⁴

¹ BRGM, Geomicrobiology and Environmental Monitoring Unit, Orléans, France

² Service Recherche, Développement et Innovation-Communautés Microbiennes, GenoScreen Lille, France

³ Université de Strasbourg, CNRS, GMGM UMR 7156, Department of Microbiology, Genomics and the Environment, Strasbourg, France

⁴ Université de Strasbourg, CNRS/EOST, LHyGeS UMR 7517, Laboratory of Hydrology and Geochemistry of Strasbourg, Strasbourg, France

16:30 – 16:40 **Concluding Remark by Professor Marie-Odile Simonnot**

16:40 **Adjourn**