

# Contaminated Site Management in Europe (CSME – 2010)

## FINAL PROGRAM

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**NH Gent Belfort Hotel, Gent, Belgium**

**October 19-21, 2010**

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**Jerry Wolf**, TRS Group, Inc., USA

## Conference Correspondence

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## Tuesday, October 19, 2010

Keynote Lecture: 35 min  
Platform Presentation: 20 min

### Keynotes Speakers

- 8:30 – 9:15**      **Ten Questions About Contaminated Sites, Microbial Services and Management**  
**Professor Willy Verstraete**  
Ghent University, Gent, Belgium
- 9:15 – 10:00**    **Perspectives of Phytoremediation**  
**Professor Filip Tack**  
Ghent University, Gent, Belgium
- 10:00 – 10:30**   **Coffee Break**

### Theme I

#### Tools for Defining/Elucidating Impacts and Liabilities

- 10:30 – 10:50**    **Soil Contamination in Residential Areas: Policy in Flanders**  
**Tim Caers, Sabine Plingers, Goedele Vanacker, Johan Ceenaeme**  
OVAM, Mechelen, Belgium
- 10:50 – 11:10**    **S-Risk – Revision of the Vlier-Humaan Model for Human Health Risk Assessment at Contaminated Sites in Flanders**  
**C. Cornelis<sup>1</sup>, A. Standaert<sup>1</sup>, H. Willems<sup>1</sup>, G. Van Gestel<sup>2</sup>**  
<sup>1</sup>VITO, Mol, Belgium; <sup>2</sup>OVAM, Mechelen, Belgium
- 11:10 – 11:30**    **Quality Assurance and the Flemish Soil Decree**  
**Joris Tallon, Dirk Dedecker, Filip De Naeyer**  
OVAM - Public Waste Agency of Flanders, Mechelen, Belgium
- 11:30 – 11:50**    **Passive Flux Meters for Monitoring VOCs in Groundwater: A First Field Screening in Europe**  
**G. Verreydt<sup>1</sup>, M. Annable<sup>2</sup>, S. Kaskassian<sup>3</sup>, J. Bronders<sup>1</sup>, I. Van Keer<sup>1</sup>**  
<sup>1</sup>VITO, Land and Water Management, Mol, Belgium  
<sup>2</sup>University of Florida, Department of Environmental Engineering Sciences, Gainesville, FL, USA  
<sup>3</sup>BURGEAP, Research and Development Department, Lyon, France

- 11:50 – 12:10**      **XRF-CPT for Real-Time Measurement of Heavy Metals in the Subsurface**  
**Michael Neuhaus<sup>1</sup>, Rick Comtois<sup>2</sup>, Judit Jeney<sup>3</sup>**  
<sup>1</sup>Fugro Consult GmbH, Germany; <sup>2</sup>Austin AI, Inc., TX, USA; <sup>3</sup>GreenLab Europe LTD., Hungary
- 12:10 – 1:30**      **Lunch Break**
- 1:30– 1:50**      **SoilRemediation: A Software Tool for Managing, Visualizing and Analyzing Environmental Data and for Assessing Site and Soil Contaminations**  
**M. H. Garcia<sup>1</sup>, J.-B. Mathieu<sup>1</sup>, V. Garcia<sup>1</sup>, A. Rabaute<sup>2</sup> and H. Demougeot-Renard<sup>1</sup>**  
<sup>1</sup>KIDOVA, Chaville, France ; <sup>2</sup>Geosubsight, Palaiseau, France
- 1:50 – 2:10**      **DNAPL Source Characterization on a Large Scale Multi-Source Site: Data Comparison and Costs / Benefits Analysis between Traditional Techniques and Emerging Tools (e.g., MIP)**  
**S. Kaskassian, A. Roger, J.-M. Côme**  
BURGEAP, Lyon, France
- 2:10 – 2:30**      **Hasloc: A GIS Tool for the Interaction between Site Development and Soil Remediation**  
**Werner Staes**  
Royal Haskoning, Belgium
- 2:30 – 2:50**      **Implementation of High Resolution Triad Site Investigations on Five Continents: Lessons Learned**  
**Joseph Fiacco<sup>1</sup>, Paulo Valle<sup>2</sup>, Maelle Duquoc<sup>1</sup>, Miguel Singer<sup>3</sup>, Camillo Coladonato<sup>4</sup>, Bernd Eccarius<sup>5</sup>, Ken Jones<sup>6</sup>, Paul Aucamp<sup>7</sup>, Seth Pitkin<sup>8</sup>, Duane Wanty<sup>9</sup>, Steve Sacco<sup>10</sup>, Vierah Hulley<sup>11</sup>**  
<sup>1</sup>ERM, USA; <sup>2</sup>ERM, Belgium; <sup>3</sup>ERM, Brasil; , <sup>4</sup>ERM, Australia; <sup>5</sup>ERM, Germany; <sup>6</sup>ERM, France; <sup>7</sup>ERM, South Africa; <sup>8</sup>Stone Environmental Inc., USA; <sup>9</sup>Intensol, USA; <sup>10</sup>Invensys, USA; <sup>11</sup>Sasol Technology, South Africa
- 2:50 – 3:10**      **Development of Conceptual Site Models for Remediation of Contamination in Fractured Bedrock**  
**Phyllis Gregoire<sup>1</sup> and Tim Whalen<sup>1</sup>, Mary Anne Phillipone<sup>2</sup>**  
<sup>1</sup>Golder Associates, Victoria, BC Canada; <sup>2</sup>Capital Regional District, Victoria, BC, Canada
- 3:10 – 3:30**      **Coffee Break**

- 3:30 – 3:50**      **Interpretation of More Than 1,000 MIP Logs: Lessons Learned**  
**Joseph Fiacco<sup>1</sup>, Paulo Valle<sup>2</sup>, Jim Allen<sup>1</sup>, Maelle Duquoc<sup>1</sup>, Miguel Singer<sup>3</sup>, Camillo Coladonato<sup>4</sup>, Bernd Eccarius<sup>5</sup>, Mike Rossi<sup>6</sup>, Duane Wanty<sup>7</sup>, Steve Sacco<sup>8</sup>**  
<sup>1</sup>ERM, USA; <sup>2</sup>ERM, Belgium; <sup>3</sup>ERM, Brasil; <sup>4</sup>ERM, Australia; <sup>5</sup>ERM, Germany; <sup>6</sup>Stone Environmental Inc., USA ; <sup>7</sup>Intensol, USA; <sup>8</sup>Invensys, USA
- 3:50 – 4:10**      **Use of MIP-CPT and BAT Sampler to Characterize and Delineate a Deep VOC Source Zone**  
**Nanda Hermes<sup>1</sup>, Michael Neuhaus<sup>2</sup>, Dirk Nuyens<sup>3</sup>, Marleen Coetsiers<sup>1</sup>**  
<sup>1</sup>ERM, Belgium; <sup>2</sup>Fugro Consult GmbH, Germany; <sup>3</sup>ERM, France
- 4:10 – 4:30**      **Heavy Metal Speciation and Pb Isotopic Composition in Natural and Tilled Soils near a Pb/Zn Mining and Smelting Area**  
**Weiling Sun<sup>\*</sup>, Fan Shu, Rui Sun, Wei Hao, Li Li, Jinren Ni**  
Department of Environmental Engineering, Peking University, The Key Laboratory of Water and Sediment Sciences, Ministry of Education, Beijing, China
- 4:30 – 6:00**      **Poster Session & Reception**

**Wednesday, October 20, 2010**

**Theme I**

**Tools for Defining/Elucidating Impacts and Liabilities (...Continued)**

- 8:30 – 8:50**      **Enhanced In-Situ Soil Analysis (EnISSA) of Volatiles and Semi-volatile Components**  
**Wouter Van de Putte, Wim Vansina, Mark Van Straaten, Samuel Van Herreweghe**  
MAVA, Steenokkerzeel, Belgium
- 8:50 – 9:10**      **LNAPL Plume Delineation and Characterization by ROST in a Site Located in the Walloon Region**  
**Olga Vounaki<sup>1</sup>, Muriel de Viron<sup>1</sup>, John Boone<sup>2</sup>, Paulo Valle<sup>1</sup>, Kurt van Rompaey<sup>1</sup>**  
<sup>1</sup>ERM, Belgium; <sup>2</sup>ERM, USA

**9:10 – 9:30**      **Vapour Intrusion Assessment in a Site Located in the Walloon Region**  
**Muriel de Viron**<sup>1</sup> Justin Desrosiers<sup>2</sup>, Paulo Valle<sup>1</sup>, Pieter Dijkshoorn<sup>1</sup>  
<sup>1</sup>ERM, Belgium ; <sup>2</sup>ERM, USA

**9:30 – 9:50**      **Demonstrating the Hydraulic Control of an Adjacent Wood on a TCE Plume via Groundwater Modelling**  
**Bruno Haerens**  
URS Benelux  
**Jan Van linden**  
URS Belgium

**9:50 – 10:10**      **Coffee Break**

## **Theme II**

### **Tools for Mitigating Impacts to Soil, Sediments and Water: Oxidative Chemical Methods for Contaminants Treatment**

**10:10 – 10:30**      **The Importance of Bench-Scale Treatability Studies as a Decision Making Tool for ISCO**  
**Daniel Cassidy**  
Western Michigan University, Department of Geosciences, Kalamazoo, MI, USA

**10:30 – 10:50**      **Influence of PAH Accessibility on Oxidation Efficiency**  
**J. Lemaire**<sup>1</sup>, **F. Laurent**<sup>2</sup>, **K. Hanna**<sup>3</sup>, **M. Bues**<sup>4</sup>, **C. Leyval**<sup>2</sup>,  
**C. Schwartz**<sup>5</sup>, **M.O. Simonnot**<sup>1</sup>  
<sup>1</sup>Laboratoire Réactions et Génie des Procédés, Nancy Université - INPL - CNRS, Nancy Cedex  
<sup>2</sup>Laboratoire des Interactions Microorganismes, Minéraux, Matière Organique dans les Sols, Nancy Université - UHP - CNRS, Vandœuvre-lès-Nancy Cedex, France  
<sup>3</sup>Laboratoire de Chimie Physique et Microbiologie pour l'Environnement, Nancy Université - CNRS, 405, Villers-lès-Nancy, France  
<sup>4</sup>Laboratoire Environnement, Géomécanique et Ouvrages, Nancy Université - INPL, Vandœuvre-lès-Nancy, France  
<sup>5</sup>Laboratoire Sols et Environnement, Nancy Université - INPL- INRA, Vandœuvre-lès-Nancy, France

**10:50 – 11:10**      **Remediation System Optimization – Minimize the O&M Duration of Any Conventional or Chemical Oxidation Technology**  
**Charles B. Whisman, P.E.**, **Denise N. Good, P.E.**  
Groundwater & Environmental Services, Inc., Exton, PA, USA

- 11:10 – 11:30**     **Well Design and Method of Application: Keys to ISCO Success**  
**Douglas D. Carvel, P.E.**  
MEC<sup>X</sup> LP SDVOSB, Houston, TX, USA
- 11:30 – 11:50**     **Applications of Activated Persulfate for Chemical Oxidation of Recalcitrant Compounds**  
**Philip Block, Jennifer Lindsey, Linda Osborne**  
FMC Corporation, Philadelphia, Pennsylvania, USA
- 11:50 – 12:10**     **In Situ Chemical Oxidation (ISCO) Project in a Paint Production Plant in Full Operation**  
**Katelijne Schaerlaekens, Karina Suy**  
MOURIK NV, Antwerp, Belgium
- 12:10 – 1:30**         **Lunch Break**
- 1:30 – 1:50**         **Reliable Use of a Fully Automated In-Situ Chemical Oxidation System**  
**Albert Smits, Gerard Borggreve and Willem Havermans**  
NTP Milieu Enschede, Enschede, The Netherlands
- 1:50 – 2:10**         **A Case Study of Recirculated Alkaline Activated Sodium Persulfate for the Treatment of Chlorinated Solvents**  
**Douglas D. Carvel, P.E.**  
MEC<sup>X</sup> LP SDVOSB, Houston, TX, USA
- 2:10 – 2:30**         **The Use of Lime to Activate Persulfate and Its Impact on Contaminant Soil Concentrations**  
**Philip Block, PhD**  
FMC Corporation, Philadelphia, PA, USA  
**Dan Cassidy, PhD**  
Western Michigan University Dept. of Geosciences, Kalamazoo, MI, USA  
**Jennifer Lindsey**  
FMC Corporation, Philadelphia, PA, USA

## Theme II

### Tools for Mitigating Impacts to Soil, Sediments and Water: Reductive Chemical Methods for Contaminants Treatment

- 2:30 – 2:50**      **Field Comparison of Selected nZVI: Case Study of Pisečna Site**  
**Petr Kvapil<sup>a</sup>, Lenka Lacinova<sup>b</sup>, Stepanka Klimkova<sup>b</sup>, Kamil Nesetril<sup>b</sup>, Miroslav Cernik<sup>a, b</sup>**  
<sup>a</sup>AQUATEST a.s. , Prague, Czech Republic  
<sup>b</sup>Technical University of Liberec, Czech Republic
- 2:50 – 3:10**      **In Situ Chemical Reduction with Emulsified Zero Valent Iron (EZVI) Source Area Treatment**  
**Lorenzo Sacchetti**  
Carus Europe, c/S. Roces 3 Cayes (Llanera) Spain
- 3:10 – 3:30**      **Coffee Break**
- 3:30 – 3:50**      **Performance Monitoring of a Zero Valent Iron PRB Installed in 2007**  
**Matthew Goerz, Peter Bennett, Lester Feldman**  
AMEC Geomatrix, Inc., Oakland, California, USA
- 3:50 – 4:10**      **Four Years Performance of the First Continuous Iron PRB in Katwijk, the Netherlands**  
**W. J. M. Havermans<sup>1</sup>, Tanja van Zanden<sup>2</sup> and Andrzej Przepiora<sup>3</sup>**  
<sup>1</sup>NTP Groep, Enschede, the Netherlands,  
<sup>2</sup>Grontmij, Waddinxveen, The Netherlands  
<sup>3</sup>Adventus Group, Waterloo, Ontario, Canada
- 4:10 – 4:30**      **Sustainable Alternative for Remediating a Chlorinated Solvent Site**  
**Peter Bennett, Matthew Goerz, Josh Andresen, Lester Feldman**  
AMEC Geomatrix, Inc., Oakland, California, USA

## Theme II

### Tools for Mitigating Impacts to Soil, Sediments and Water: Biological and Physical Methods for Contaminants Treatment

- 4:30 – 4:50**      **Experiences with Biodegradation and Enhanced Biodegradation of MTBE: Co-Oxidation, Competitive Inhibition, Biostimulation and Bioaugmentation**  
**J. Birnstingl<sup>1</sup> and B. Mork**<sup>2</sup>  
<sup>1</sup> Regenes Ltd, Bath, UK  
<sup>2</sup> Regenes Inc., San Clemente, CA, USA
- 4:50 – 5:10**      **Fully Automated Injection and Infiltration Systems for In-Situ Enhanced Bioremediation of VOCs**  
**Gerard Borggreve, Dennis Scheper and Willem Havermans,**  
NTP Milieu Enschede, Enschede, The Netherlands
- 5:10 – 5:30**      **Different Methods to Stimulate the Biological Degradation of 1,1,1-Trichloroethane**  
**Koen Meskens, Gunther Heylen and Kurt Bouckenooghe**  
Soresma, Antwerpen, Belgium
- 5:30 – 5:50**      **Enhanced *in situ* CHC-Groundwater Remediation within a Fractured Bedrock Aquifer**  
**Konstantin Summ**  
AMEC Earth & Environmental GmbH, Frankfurt, Germany  
**Matthias Sumann**  
Regenes Ltd, Regensberg, Germany  
**Jeremy Birnstingl**  
Regenes Ltd, Bath, United Kingdom (corresponding author)
- 5:50 – 6:10**      **In-Situ Thermal Desorption (ISTD) for Efficient Source Removal and Subsequent Closure of Long-Term Cutting-Off Technologies**  
**Niels Ploug, Maiken Faurbye**  
Krüger A/S, Gladsaxe, Denmark  
**Pia Juul Jensen, Steffen Griepke Nielsen**  
NIRAS A/S, Allerød, Denmark  
**Gorm Heron**  
TerraTherm Inc., Keene, CA 93531, USA

**Thursday, October 21, 2010**

**Theme II**

**Tools for Mitigating Impacts to Soil, Sediments and Water:  
Biological and Physical Methods for Contaminants Treatment**

(..... Continued)

- 8:30 – 8:50**      **Injection and Infiltration Systems for In-Situ Enhanced Bioremediation**  
**Willem Havermans<sup>1</sup>, Gerard Borggreve<sup>1</sup> and Andrzej Przepiora<sup>2</sup>**  
<sup>1</sup>NTP Milieu Enschede, Enschede, The Netherlands  
<sup>2</sup>Adventus Group, Waterloo, Ontario, Canada
- 8:50 – 9:10**      **Bioaugmentation with Engineered Endophytic Bacteria Improves Phytoremediation in the Field**  
**N. Weyens<sup>a\*</sup>, J. Dupae<sup>a</sup>, D. van der Lelie<sup>b</sup>, S. Taghavi<sup>b</sup>, J. Vangronsveld<sup>a</sup>**  
<sup>a</sup>Hasselt University, Diepenbeek, Belgium.  
<sup>b</sup>Brookhaven National Laboratory, Upton NY, USA
- 9:10 – 9:30**      **Performance Considerations for the Release of Oxygen by Metallic Peroxide Compositions**  
**<sup>1</sup> Jeremy Birnstingl Ph.D., <sup>2</sup> Ben Mork Ph.D.**  
<sup>1</sup>Regenesis, Bath, United Kingdom  
<sup>2</sup>Regenesis, San Clemente, CA, USA
- 9:30 – 9:50**      **Distillating an Appropriate Approach for a Mixed Mineral Oil & Chlorinated Solvents Contamination: Integration of Different Remediation Techniques**  
**Jeroen Vandenbruwane, Fleur Verfaillie and Geert Boucneau**  
Universoil BVBA, Wingene, Belgium
- 9:50 – 10:10**      **The Effect of Aquifer pH Buffer Capacity on the Bio-Enhanced Dissolution of TCE DNAPL**  
**Jo Philips, Dirk Springael and Erik Smolders**  
Division of Soil and Water Management, Katholieke Universiteit Leuven, Belgium
- 10:10 – 10:30**      **Coffee Break**

**10:30 – 10:50      Chemical Reduction, Chemical Stabilisation and Enhanced Anaerobic Biodegradation of Chlorinated Hydrocarbons and Heavy Metals by Direct Injection of Reagents**

**Eric de Zeeuw**, drs.

Groundwater Technology B.V., Rotterdam, The Netherlands

**10:50 – 11:10      In-Situ Remediation of Mercury-Contaminated Soil and Hydrocarbon-Contaminated Groundwater – Breitenbach Site Project**

**Christian Ille<sup>1</sup>, Marie-Claire Magnie<sup>2</sup>, Jean-Yves Cojan<sup>2</sup>**

<sup>1</sup>Sol Environment, France, <sup>2</sup>Inertec, Rueil Malmaison, France

### **Theme III**

## **Strategies for Managing Contaminated Properties**

**11: 10 – 11:30      Environmental Liability Transfer in Europe**

**I. Heasman<sup>1</sup>, F. J. Westcott<sup>2</sup>, P. Connell<sup>3</sup> and E-L. Visser-Westerwelde<sup>4</sup>**  
**(NICOLE Brownfield Working Group)**

<sup>1</sup>Taylor Wimpey UK Ltd, United Kingdom

<sup>2</sup>RSK Group plc, Manchester, United Kingdom

<sup>3</sup>Woodholmes Group, Manchester, United Kingdom

<sup>4</sup>Independent Consultant, The Netherlands

**11:30 – 11:50      Legal Framework for the Development of Brownfields**

**Dirk Henckens, Pascal Maebe, Filip De Naeyer**

OVAM - Public Waste Agency of Flanders, Mechelen, Belgium

**Koen Miseur**

Agentschap Ondernemen, Ubicenter, Leuven, Belgium

**11:50 – 12:10      Use of Metal-Immobilizing Soils Amendments in a Risk-Based Management of Metal Contaminated Soils: Risk Assessment - Physico-Chemical Studies**

**S. Van Slycken<sup>1</sup>, K. Adriaensen<sup>2</sup>, B. Cornelis<sup>3</sup>, A. De Vocht<sup>3</sup>, E. Meers<sup>1</sup>, J. Vangronsveld<sup>2</sup>, F. M. G. Tack<sup>1</sup>**

<sup>1</sup>Laboratory of Analytical Chemistry and Applied Ecochemistry, Ghent University, Gent, Belgium

<sup>2</sup>Centre for Environmental Sciences, Laboratory of Environmental Biology, Hasselt University, Diepenbeek, Belgium

<sup>3</sup>PHL University College, Dept. PHL-BIO, Diepenbeek, Belgium

**12:10 – 1:30      Lunch Break**

- 1:30 – 1:50**      **Environment, Health and Safety in Soil Remediation: Achilles Quality System**  
**Mark Carpels<sup>1</sup>, Filip De Naeyer<sup>2</sup>, Patrick Ceulemans<sup>2</sup> and Tommy Bogaert<sup>2</sup>**  
<sup>1</sup>ECO2 bvba, Retie, Belgium  
<sup>2</sup>OVAM, Belgium
- 1:50 – 2:10**      **Carcoke Zeebrugge: Remediation of a Former Coking Works**  
**Stany Pensaert Bartel De Clercq**  
DEC NV (DEME Environmental Contractors), Zwijndrecht, Belgium
- 2:10 – 2:30**      **Experiences with Strategic Sustainable Industrial Site Soil Management**  
**Eric de Zeeuw, drs.**  
Groundwater Technology B.V., Rotterdam, The Netherlands
- 2:30 – 2:50**      **Soil investigations and Remediation Plan for the Tar Production Plant ‘Goudronnerie Robert’ Situated in Ransart, Belgium**  
**A. El Katari and W. Mondt**  
Ecorem nv, Aartselaar, Belgium
- 2:50 – 3:10**      **Restoration of a Wetland Impacted by Fill Activities**  
**Lester Feldman, Syed Rehan P.E, James Honniball, Carla Scheidlinger**  
AMEC Geomatrix Inc., Oakland, California, USA
- 3:10 – 3:30**      **Coffee Break**
- 3:30 – 3:50**      **Marginal Effect of Heavy Metals on the Use of Biomass from Phytoremediation for Energy: Interpreting the Labyrinth of European and Belgian Legislation**  
**Nele Witters<sup>1</sup>, Bernard Vanheusden<sup>1</sup>, Stijn Van Slycken<sup>2</sup>, Filip Tack<sup>2</sup>, Erik Meers<sup>2</sup>, Linda Meiresonne<sup>3</sup>, Robert Carleer<sup>1</sup>, Nele Weyens<sup>1</sup>, Kristin Adriaensen<sup>1</sup>, Theo Thewys<sup>1</sup>, Jaco Vangronsveld<sup>1</sup>**  
<sup>1</sup>Centre for Environmental Sciences, Hasselt University, Diepenbeek, Belgium  
<sup>2</sup>Lab. of Analytical and Applied Ecochemistry, Ghent University, Gent, Belgium  
<sup>3</sup>INBO, Research Institute for Nature and Forest, Geraardsbergen, Belgium

## Posters

### **The Removal of Cellulose Wastes : The Application of Cellulolytic Biofilms**

**Vladimir Jirku<sup>1</sup>, Jitka Hrdinova<sup>1</sup>, Lucie Kriklavova<sup>2</sup>, Gita Prochazkova<sup>1</sup>,  
Tereza Krulikovska<sup>1</sup> Alena Cejkova<sup>1</sup> and Jan Masak<sup>1</sup>**

<sup>1</sup>Institute of Chemical Technology; <sup>2</sup>Technical University of Liberec, Liberec, Czech Republic

### **A Study of Oxidation Using Solid Peroxygens**

**Douglas D. Carvel, P.E.**

MEC<sup>X</sup> LP SDVOSB, Houston, TX, USA

### **“Sales or Science” - Is Effective Marketing or Good Science and Engineering Controlling the Selection of Remedial Technologies**

**Douglas D. Carvel, P.E.**

MEC<sup>X</sup> LP SDVOSB, Houston, TX, USA

### **The Effectiveness and Biological Impact of Zero-Valent Iron Nanoparticles (ZVI) for the *In Situ* Immobilisation of Heavy Metals (Pb) in Soil Samples**

**C. Fajardo<sup>1</sup>, A. Pérez-Sanz<sup>2</sup>, L. Ortíz<sup>1</sup>, M. M. Gil-Díaz<sup>1</sup>, ML Rodríguez-Membibre<sup>1</sup>,  
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### **Column Experiments and Modeling of Solutes and Colloidal Transport in Complex Porous Media**

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### **Technologies to Evaluate and Remediate Contaminated Sites**

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### **Molecular Tool to Characterize the Native Microbial Populations on Different Composting Systems: Field Application**

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## **Zero Valent Iron Nanotechnology for in Situ Remediation of Metal Contaminated Sites at the Basque Country**

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## **Remediation of Chlorinated Solvents by Modified Fenton's Reagents and Enhanced Bioremediation**

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## **Contents and Extractability of Cd, Cu, Pb and Zn in Flemish Dredged Sediment Disposal Sites**

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## **Use of Metal-Immobilizing Soils Amendments in a Risk-Based Management of Metal Contaminated Soils: Risk Assessment**

**Jaco Vangronsveld<sup>1</sup>, Erik Meers<sup>2</sup>, Stijn Van Slycken<sup>2</sup>, Filip Tack<sup>2</sup>, Bart Cornelis<sup>3</sup>, Kristin Adriaensen<sup>1</sup>, Alain Devocht<sup>1,3</sup>, Nele Weyens<sup>1</sup>, Ann Cuypers<sup>1</sup>, Tim Nawrot<sup>1</sup>, Ann Ruttens<sup>1,4</sup>**

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## **Combined Application of Lactates and nZVI for Remediation of Chlorinated Hydrocarbons**

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