

Ozone & Related Oxidants: Solutions for Emerging Pollutants of Concern to the Water and the Environment

International Conference
April 28 - 30, 2010 - Geneva, Switzerland

Organised by the European African Asian Australasian Group EA₃G
of the International Ozone Association IOA

SCIENTIFIC PROGRAMME

This event continues a long series of successful conferences organized to provide an international forum for all concerned with fundamental, engineering and applied aspects of oxidation techniques involving ozone and related oxidants.

SCOPE AND OBJECTIVES

Health risks associated with contaminated water and wastewater, continuous degradation of aquatic environment and water scarcity issues are contributing to the growth of the use of advanced technologies driven by legislative impetus. Emerging pollutants of concern include pharmaceuticals, endocrine-disrupting compounds, surfactants, plasticizers, disinfection by-products and other chemicals. The removal of these compounds will drive the selection of water and wastewater treatment processes in the very next future. This event provides an overview of the current state of knowledge and latest advances regarding the use of Ozone and Related Oxidants for providing solutions for the control of emerging parameters including persistent organic pollutants, hazardous substances and microbiological contaminants in any water. The topics of interest connected to the Conference theme include but are not limited to the combinations of:

Drinking water production - Process water production - Wastewater treatment - Full treatment line - Disinfection - Ozone oxidation - Oxidation processes - Synergy effects - Microorganisms - Persistent pollutants - By-products - Toxicity - Reactions, kinetics - Hydrodynamics, mass transfer - System design - Process Applications - Case studies

PROGRAMME AND CONTENTS OF THE PROCEEDINGS

The scientific programme includes scientific and technical presentations and poster presentations with introduction platform, Near 60 presentations were selected by the Programme Committee and arranged according to the following sessions:

Introductory conferences

Conference opening Z. Do Quang, IOA-EA₃G President

Challenges in water treatment M. Roustan, S. Baig

Swiss Regulation Project for Treatment of secondary urban WWTP effluents J-L. Walther

Session 1. Emerging pollutants

1.1 Oxidative treatment of organic contaminants Diclofenac, Iopamidol, Tri-n-butyltin chloride, Tris-(2-chloroisopropyl) Phosphate and Tri-n-butyl Phosphate in Wastewater Effluents with Ozone and Ozone/Hydrogen peroxide M. M. Sein, A. Golloch and T. C. Schmidt (Germany)

1.2 Occurrence and treatment of Tetracycline and Sulfonamide antibiotics in manure A. Karci, H. M. Otker Uslu, I. A. Balcioglu (Turkey)

1.3 Ozone and persulphate oxidation of Oxytetracycline antibiotic on spent bentonite A. Ozbarli, A. Karci, A. Erdinc, I. A. Balcioglu (Turkey)

1.4 Degradation of an iodinated contrast agent by catalytic ozonation in aqueous solution G. Abdelli, Q. M. Bui, N. Karpel Vel Leitner (France)

1.5 Elimination of Amoxicillin and its antibacterial activity by UV/H₂O₂ process J-W. Kang, Y. Jung, and W. Kim (Korea)

1.6 Ozonation of Ibuprofen in the presence of iron species N. Sabri, K. Hanna, V. Yargeau (Canada)

Session 2. Poster session

2.1 Evaluation of estrogenic activity in environmental waters from Guandu river (Brazil) and estrogenicity removal by ozonation and chlorination A. C. V. Dias, D. M. Bila, F. W. Gomes, C. F. Melo, M. Dezotti (Brazil)

2.2 Methanol decomposition in aqueous solution by simple ozonation and the combination of ozone/activated carbon I. Fuentes C., T. Poznyak, J.L. Rodriguez S. (Mexico)

2.3 Abatement of surface waters pollutants by coupling gliding electric discharges and cheap dispersed catalyst E. Njoyim Buleng, S. Laminsi, P. Ghogomu and J.-L. Brisset (Cameroon, France)

2.4 Decomposition of detergents in industrial wastewater by AOP in flow systems L. Kos, J. Perkowski, R. Żyła (Poland)

2.5 Application of Fenton-based processes in different combinations for food-processing wastewater treatment N. Dulova, M. Trapido (Estonia)

2.6 Combined Physicochemical Treatment of textile and mixed industrial wastewater A. Dulov, N. Dulova, M. Trapido (Estonia)

2.7 Ozonation of a pretreated landfill leachate: Evaluation of recalcitrance removal P. Van Aken1, N. Lambert1, J. Luyten1, J. Degre2 and S. Liers1 (Belgium)

Session 3. Emerging Pollutants

3.1 Chemical and toxicological identification of by-products during oxidative waste water treatment J. Tuerk, A. Boergers, J. Richard, E. Dopp, M. Wolff, N. Janzen, M. Tavlan, X. Chen, K. Bester (Germany, Denmark)

3.2 Removal of Levofloxacin by ozonation and photocatalysis D. Nasuhoglu, A. Rodayan, D. Berk and V. Yargeau (Canada)

3.3 Evaluation of ozone for removal of potential endocrine disruptors from urban wastewater effluents using small model organisms L. Castillo, D. du Pasquier, K. Seriki, F. Martin, S. Mateos, S. Pallud-Mothré, A. Sebillot, G.F. Lemkine, B.A. Demeneix (France)

3.4 The effect of ozone on the biodegradability of Sulfomethoxazole (SMX) S. Larcher and V. Yargeau (Canada)

Session 4. Poster session

4.1 Unstationary film model for complex reaction mechanism. Parameter identification and sensitivity analysis in ozone reactions S.C. Cardona, F. López, A. Abad, J. Navarro-Laboulais (Spain)

4.2 Combined phenol and acetate degradation by O₃/UV in two different reactor configurations W. Van de Moortel, K. Van Eyck, S. Liers, J. Degre2 and J. Luyten (Belgium)

4.3 Reconstruction of dynamics variables for the biodegradation of pre-ozonated chlorophenols in aqueous solution P. Guerra, A. García, T. Poznyak, I. Chairez, A. Poznyak, E. I. García, I. Fuentes (Mexico)

4.4 Ozonation of TiO₂, SiO₂, and Al₂O₃ in aqueous solution J.L., Rodriguez S., T. Poznyak, M.A. Valenzuela Z. (Mexico)

4.5 Influence of chemical surface characteristics of natural zeolite on catalytic ozone abatement H. Valdés, E. Padilla, C. A. Zaror (Chile)

4.6 Application of AOP for cleaning of industrial water generated in wet dedusting of top gases M. Czaplicka, R. Kurowskia (Poland)

4.7 Ozone generated by electrolytic means as an alternative to chlorine-based sanitizers in food safety applications B. Yost (USA)

4.8 Luminotox: an effective tool for wastewater treatment management F. Bellemare, L. Lorrain, N. Boucher (Canada)

Session 5. Fundamentals and Process

5.1 Chemical properties and environmental applications of reactive species formed in electrical discharges J.-L. Brisset, D. Moussa, E. Hnatiuc (France)

5.2 Determination of absolute kinetic rate constants in ozonation reactions using an unstationary film model. Ozonation of azo-compounds S.C. Cardona, F. López, A. Abad, A. García-Blanquer, J. Navarro-Laboulais (Spain)

5.3 Oil-Refinery Wastewater Treatment Aiming Reuse by Advanced Oxidation Processes (AOPs) Combined with Biological Activated Carbon (BAC) G.L. Sant'Anna Jr., B.M. Souza, A.C. Cerqueira, M. Dezotti (Brazil)

5.4 Removal of bio-recalcitrant compounds with a hybrid ozone/activated carbon process applied to an industrial effluent *T. Merle, J.S. Pic., M.H. Manero and H. Debellefontaine (France)*

5.5 Aeration, oxidation and ion exchange for natural pollutants removal from groundwater *R. Munter, M. Trapido, Y. Veressinina, L. Lumiste, J. Sutt, P. Tonisson, T. Eensalu, T. Kivimae (Estonia)*

5.6 Influence of EFOM on the oxidation of atrazine by ozone and UV/H₂O₂ in secondary effluents *S. Pereira, R. F. Dantas, S. Esplugas, C. Sans, M. Dezotti (Spain)*

Session 6. Poster session

6.1 Analysis on the Natural Organic Matter (NOM) and Disinfection By-Products in full-scale advanced water treatment plant and conventional water treatment plant *J-C. Jeon, C-H. Jo, I. Choi, T-M. Hwang, Y. Choung (Korea)*

6.2 A case study on automatic ozone dose control system based on ozone consumption rate in a full scale advanced water treatment plant *J-C. Jeon, C-H. Jo, K-H. Lee, T-M. Hwang, Y. Choung (Korea)*

6.3 Enhanced inactivation and DBPs Control by sequential disinfection using ozone/chlorine or chlorine dioxide/chlorine *T-M. Hwang, S. H. Nam, W. B. Go, S. Lee, M. Cho, J-H. Kim (Korea)*

6.4 Control strategy for an ozonation plant with UV-spectrometry *H. Schaar, R. Hofstädter, E. Saracevic, S. Winkler and N. Kreuzinger (Austria)*

6.5 Advanced Oxidation Processes (AOP) - Comparison of different treatment scenarios based on processes combining Ozone, UV and Hydrogen Peroxide *A. Ried, A. Wieland, J. Mielcke, D. Rohring (Germany)*

6.6 Case-study of ozonation step at the Dongguan drinking water plant by means of inhomogeneous feed gas plasma processing ozone synthesis *F. Krogh, H-P. Schiller, B. Paolini, A. Freilich, J. Lopes (Switzerland, USA)*

6.7 In-Situ chemical oxidation with ozone in gas phase: lesson learnt from the first Italian full-scale application *E. Crescini, L. Amighetti, A. Guerini, G. Riva, F. Dalleria (Italy)*

Session 7. Case studies in full scale plants:

7.1 Ozonation of tertiary effluent at the Clark County water reclamation district advanced water treatment facility *M. A. Oneby, M. G. Priest, J. H. Borchardt (USA)*

7.2 Ozone for tertiary treatment of municipal wastewater – Experiences from the first full scale plant in Germany *P. Jagemann, S. Lyko, A. Ried, A. Wieland (Germany)*

7.3 Ozone disinfection of urban wastewater at full scale – Impact on persistent pollutants *S. Baig, J.M. Choubert, S. Martin Ruel, M. Esperanza, H. Budzinski, C. Miège, M. Coquery (France)*

7.4 Ozone: a wastewater disinfectant of the future *G. Gesuale, P-A. Liechti, M. Fournier, P. Payment, C. Gagnon, R. Hausler (Canada)*

7.5 Modelling on-site ozonation units. A case study on Annet-sur-Marne water works *P. Mandel, M. Maurel, C. Lemoine, P. Roche, D. Wolbert (France)*

Session 7. Case studies in full scale plants (cont'd)

7.6 Assessment and modeling of a full-scale ozonation step of municipal secondary wastewater effluent *S.G. Zimmermann, M. Wittenwiler, J. Hollender, M. Krauss, S. Koepke, E. Salhi, F. Hammes, E. Gansner, M. Koch, C. Ort, H.R. Siegrist, U. von Gunten (Switzerland)*

7.7 Impact of ozonation on the genotoxic activity of tertiary treated municipal wastewater *M. Mišik, F. Ferk, S. Knasmueller, M. Cichna-Markl, T. Grummt, H. Schaar and N. Kreuzinger (Austria)*

7.8 Potential of ozone for the removal of hazardous micropollutants and related changes in dissolved organic matter composition in a municipal biotreated effluent *B. Domenjoud, N. Cortés, J. Caixach, S. Esplugas, S. Baig (Spain, France)*



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