

27th – 30th
SEPTEMBER 2016

CRETE 2016

5th International Conference on
INDUSTRIAL & HAZARDOUS
WASTE MANAGEMENT



CONFERENCE PROGRAMME

Chania – Crete – Greece

www.hwm-conferences.tuc.gr

CRETE 2016

5th International Conference on Industrial and Hazardous Waste Management

27-30 September 2016,
Chania, Crete, Greece

Organized by:

Technical University of Crete (GR)

University of Padova (IT)

Hamburg University of Technology (DE)

International Waste Working Group -IWWG

Sponsored by:

Hellenic Petroleum S.A. (GR)

Region of Crete (GR)

PRESENTATION

Industrial and Hazardous Waste (IHW) represents a large and often rather difficult to manage fraction of waste generated worldwide. Its properties impose the need for a special and careful management with a high responsibility in order to protect human health as well as flora and fauna. Starting from proper waste collection and characterization, industrial and hazardous waste management includes extensive and continuous research for the further development of effective avoidance, recycling and treatment strategies and methods.

In many countries the industry still needs clear targets, timelines and greater understanding of the waste stream and their compositions as well as the associated risks. It is important to introduce worldwide the concept of the producer responsibility. In conventional industry should respect the same standards for IHW management as existing in all other countries, and costs have to be paid through the sold products.

CRETE Conference series on “Industrial and Hazardous Waste Management” has established itself as an

international meeting point for scientists and practitioners that work in the field of industrial and hazardous waste management. During a large number of oral and poster presentations, actual and profound knowledge and experiences are discussed in order to further develop and improve the knowledge in this field. Many of this information can be applied directly in order to solve IHW problems worldwide.

THE CONFERENCE STRUCTURE

CRETE 2016 focuses on innovative aspects of Industrial and Hazardous Waste Management, presenting new technologies, describing the state of the art and related case studies, discussing main controversial subjects and valuating social and financial balances.

The Conference will last four days (three days of scientific sessions and one day for training courses) and includes oral presentations, sessions, workshops and sessions in Greek, as well as poster presentations. The official language of the Conference will be English. Selection of papers and session destination are based on various factors, including relevance of the topic, nature of the paper (case study, preliminary work, design, etc.), specificity of the topic and novelty.

The Conference is organized in five parallel sessions for oral presentations. Two training courses is arranged prior to the opening and four training sessions is scheduled in the Program, covering the following themes: waste to energy, remediation of old landfills, leaching assessment and modeling, hyperspectral imaging and also advance wastewater treatment methods. As a special emphasis of the Conference is put on "Plastic Waste Management: How Plastic Pollution Changing the Environment". A round table discussion will take place at the end of the Conference covering the topic. In a holistic approach the environmental impact and appropriate plastic waste management solutions shall be presented and discussed considering aspects like waste minimization and management during production and utilization, new developments of recycling strategies and technologies, special risk for the marine and river

environment and as well as special regional problems connected to refugees, tourists, etc.

Conference Chairmen

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Conference Venue and Location

The 5th International Conference on Industrial and Hazardous Waste Management, CRETE 2016, will be held in the conference facilities of the "Avra Imperial Beach Resort & Spa" Hotel, which is located in the scenic seaside village of Kolymvari, west of Chania.

Continuously updated information available on the website: <http://hwm-conferences.tuc.gr/>

DAILY PROGRAMME

12:00 – 20:00 **Registration**

IWWG TRAINING COURSES

14:00 – 17:00

I. SPECIAL WASTE TO ENERGY (SP-WTE)

Prof. Karl E. LORBER,
Montan University of Leoben (AT),
Dr. Renato SARC,
Montan University of Leoben (AT)

17:00 – 20:00

II. REMEDIATION OF OLD LANDFILLS

Dr. Marco RITZKOWSKI,
Hamburg University of Technology (DE)

20:00 – 23:00

**WELCOME CEREMONY AT THE AVRA
IMPERIAL HOTEL**

OPENING SESSION

07:30 – 10:00 **Registration**

09:00 – 10:30 ***Room – MAISTRO***

Opening Ceremony - Welcome Address

Chairmen: E. Gidakaros (GR)

R. Cossu (IT)

R. Stegmann (DE)

Opening Session

I. Prof. Evangelos Gidakaros

“Hazardous Waste Out of Control Around the World”

II. Prof. Rainer Stegmann

“Make IWWG a Strong, High Quality Solid Waste Society”

III. Prof. Raffaello Cossu

“Back to Earth Alternatives in Waste Management Strategies Based on Circular Economy”

10:30 – 11:00 **Keynote Speaker**

Stefanie Werner

Federal Environmental Agency (DE)

“Strategies to Combat Marine Litter - From Theory to Action”

11:00 – 11:30 **Coffee Break**

11:30 – 13:30 **Room – MAISTRO**

SESSION A1

Hazardous Waste Regulation

Chairmen: S. Thorneloe (US)
 H. Van der Sloot (NL)

A1.1.

Development and implementation of the leaching environmental assessment framework in the United States

S. THORNELOE, G. HELMS, D. FAGNANT, J. MILLS (US)

A1.2.

Establishing validated concentration limits for ecotoxicological tests HP 14 for waste

P. HENNEBERT, P. PANDARD, C. TEBBY (FR)

A1.3.

Evaluation of current hazardous waste management system in Turkey

E. ATEŞ, S.L. SANIN (TR)

A1.4.

Waste classification as hazardous or non-hazardous: An environmental and financial issue

S. CHRISTOFOROU, S. MAVROMATIS (GR)

A1.5.

Waste management regulation and applications of hazardous waste management; a case study of Turkey

V. BALAHORLI, B. TOMBUL, M. GOZDE (TR)

Discussion

11:30 – 13:30 **Room – SIROCCO**

SESSION B1

Biorefineries

Chairman: M. Nelles (DE)

B1.1.

Utilisation of biogenic waste and residues in Germany

M. NELLES, A. BROSIOWSKI, A. SCHÜCH (DE)

B1.2.

Use of the BOD/COD ration on waste eluate as a new alternative parameter for the measure of the biological activity

R. COSSU (IT)

B1.3.

Biomethanation and valorisation of mink droppings and byproducts

D.A. SARIGIANNIS, G. DONTIS, I. ZARKADAS (GR)

B1.4.

Production of biodiesel from waste urban sludge

A.G. CAPODAGLIO, M.V. LOPEZ, D. DONDI (IT)

Discussion

11:30 – 13:30 **Room – PUNENTE**

SESSION C1:

Landfill Issues

Chairman: G. Rettenberger (DE)

C1.1.

Improving landfill modelling by taking the example landfill gas prognosis

G. RETTENBERGER (DE)

C1.2.

The case study of a municipal solid waste landfill: A stability analysis

G. CHRYSIKOS, A. KOUSAITI, R. STEGMANN, E. GIDARAKOS (GR)

C1.3.

Long term monitoring of the leachate generation and quality in an Italian landfill that applies concentrated leachate recirculation

P.S. CALABRÒ, D. KOMILIS, E. GENTILI, C. MEONI, S. ORSI (IT)

C1.4.

Do we need hazardous waste landfills in the future?

R. STEGMANN (DE)

C1.5.

Multicriteria GIS decision analysis in rural landfill site selection - Case study Stara Planina Mt. in Serbia

M. NENKOVIC-RIZNIC (RS)

Discussion

11:30 – 13:30 **Room – LEVANTE**

SESSION D1:

**Management of Contaminated Sites in Greece
(in Greek)**

Διαχείριση Ρυπασμένων πεδίων στην Ελλάδα

Chairmen: V. Stoilopoulos (GR)
 E. Gidarakos (GR)

D1.1.

*Contaminated sites in Greece: Legal framework
and reality*

M. AIVALIOTI, E. GIDARAKOS (GR)

D1.2.

*Identification and first characterization of
contaminated sites from industrial - hazardous
wastes in Attica region and nine prefectures of
Greece*

C. TSOMPANIDIS, G. LOLOS, F. LOLOS, K.
PITSAKI, A. MAVROPOULOS, A. MENTZIS, S.
PAPAGRIGORIOU, K. MANITARA (GR)

D1.3.

*Environmental restoration of Thoriko beach,
Lavrio Attica*

V. STOILOPOULOS (GR)

D1.4.

*Construction methodology of environmental
restoration of Thoriko beach, Lavrio Attica*

S. XARCHAKOU, I. LAGONIKA (GR)

D1.5.

*Petroleum contaminated sites remediation: The
case of an operating refinery*

M. AIVALIOTI, F. SIMANTIRAKI, P. PAPOULIAS,
E. GIDARAKOS (GR)

Discussion

Wednesday, September 28th - Morning

11:30 – 13:30 **Room – LIVA**

WORKSHOP 1:

Controlling Mercury in the Waste Stream

Coordinated by: T.J. McDonnell (GB)
K. Williams (GB)

Currently, UNEP has coordinated with most world governments to ratify the removal and safe storage of all forms of anthropogenic mercury. As a consequence of both EU Energy policy and exemptions within the RoHS Directive, small amounts of mercury have been extensively distributed across EU member states. This is in the form of low energy lighting such as compact fluorescent bulbs. Fluorescent lighting is part of the WEEE waste stream and is classified as a hazardous. The collection and recovery of mercury for businesses is through country specific compliance schemes. Non-business lighting is through designated collection facilities mostly located within waste recycling centers accessible to the public. In order to facilitate lamp waste treatment and maximize the recovery rates the EU supported the ILLUMINATE project.

W1.1.

European Waste Electrical and Electronic Equipment Directive focusing on lamp waste

T.J. MCDONNELL, K. WILLIAMS (GB)

W1.2.

Hazardous lamp waste - mercury risks to human and the environment

T.J. MCDONNELL, K. WILLIAMS (GB)

W1.3.

Technologies for best practice in enviro/economic recovery processes from lamp waste

T.J. MCDONNELL, K. WILLIAMS (GB)

Discussion

13:30 – 15:30 **Lunch Break**

15:30 – 16:00

Poster Session

Discussion

Exhibition on “PLASTIC WASTE POLLUTION & ENVIRONMENTAL EFFECTS”

During “CRETE 2016”, an exhibition focusing on the deleterious effects of plastic waste pollution on the environment will be taking place at the conference venue. General aspects of global plastic production including statistical approaches, toxicity effects, marine pollution by plastic debris, and worldwide management practices are presented by bringing together most of the literature published so far on the topic. Practices for production minimization, innovative techniques for recycling and recovery as well as a guide of personal choices are also debated. The exhibition is organized and created by the School of Environmental Engineering of the Technical University of Crete (Laboratory of Toxic and Hazardous Waste Management).

16:00 – 17:30 **Room – MAISTRO**

SESSION A2:

Military Waste

Chairman: R. Trapp (FR)

A2.1.

The environmental impact of chemical and biological warfare – An overview

R. TRAPP (FR)

A2.2.

Reductive degradation of 3-nitro-1,2,4-triazol-5-one (NTO) and 2,4-dinitroanisole (DNAN) in a Fe-Cu bimetal system

E. KITCHER, W. BRAIDA, J. PAVLOV,

A. KOUTSOSPYROS, T.-L. SU,

C. CHRISTODOULATOS (US)

A2.3.

The influence of organophosphorus chemical weapons and products of degradation for aquatic ecosystem health

V.D. TONKOPII (RU)

Discussion

16:00 – 17:30 **Room - SIROCCO**

SESSION B2:

Asbestos

Chairman: F. Paglietti (IT)

B2.1.

Transboundary movement of dangerous waste: asbestos-containing waste as a case study

F. PAGLIETTI, B.C. DELLA STAFFA, S. BELLAGAMBA, S. MALINCONICO, P. DE SIMONE, M. GIANGRASSO (IT)

B2.2.

Asbestos cement treatment via silylation processes using microwave radiation

I. PAPANGELI, A. VALOUMA, E. GIDARAKOS (GR)

B2.3.

Decomposition of cement - asbestos panels at thermal treatment

V.B. PETROVIĆ, B. SIMENDIĆ, V. MARINKOVIĆ (RS)

B2.4.

Chrysotile asbestos detoxification with a combined treatment of oxalic acid and silicates producing amorphous silica and biomaterial

A. VALOUMA, A. VERGANELAKI, N.P. MARAVELAKI, E. GIDARAKOS (GR)

Discussion

16:00 – 17:30 **Room - PUNENTE**

SESSION C2:

Industrial Wastewater Treatment I

Chairman: P. Hennebert (FR)

C2.1.

Mine solid residue and mine water treatment at laboratory and pilot scale by modified bauxite residue with gypsum, an effective and cheap source of iron and alkalinity

P. HENNEBERT, L. POIZAT, P. MERDY (FR)

C2.2.

Elimination of endocrine disruptors from water
O. SOLCOVA, Y. MALETEROVA, L. SPACILOVA, M. MOROZOVA, F. KASTANEK (CZ)

C2.3.

Biotransformation of acetaminophen by four phylogenetically distinct bacteria
C. AKAY, U. TEZEL (TR)

C2.4.

Electroplating wastewater treatment plant in Radwar, Warsaw, Poland before and after upgrading
K. UMIEJEWSKA (PL)

C2.5.

Ag- Sm_2O_3 nanocomposite for environmental remediation of cyanide from wastewater
M.A. BARAKAT (SA)

Discussion

16:00 – 17:30 Room – LEVANTE

SESSION D2:

Recycling and Disposal of Hazardous Waste in Greece (in Greek)

Ανακύκλωση και Διάθεση των Επικίνδυνων Αποβλήτων στην Ελλάδα

Chairmen: E. Gidakos (GR)
 S. Eletheriadou (GR)

D2.1.

Environmental accident in sorting unit, baling, temporary storage and recycling of solid waste: The experience of The Hellenic Environmental Inspectorate (Southern Greece)

V. DALAMAGAS, A. DROUZA, S. ELETHERIADOU, E. GIDARAKOS, G. KOTINI, M. NIKIFORAKI (GR)

D2.2.

Disposal of hazardous waste of spent batteries and accumulators in southern Greece: The experience of the Hellenic Environmental Inspectorate (H.E.I.)

V. DALAMAGAS, S. ELEFTHERIADOU, E. GIDARAKOS, G. KOTINI, M. NIKIFORAKI (GR)

D2.3.

Leaching tests as a means of illegal hazardous waste disposal assessment in Greek landfills

S. KAVOURI, E. CHALARAKIS, A. KORKOLIS (GR)

D2.4.

Recycle for what its worth

TH. LEKKAS, Y. RAZIS, I. KOMIS, T. ARVANITIS (GR)

Discussion

Wednesday, September 28th-Afternoon

16:00 – 17:30 **Room - LIVA**

WORKSHOP 2:

IWWG: Waste and Art

Coordinated by: R. Stegmann (DE)
C. Westhuyzen (ZA)

The practice of making art from waste and unusual material is widely spread. This is in response to the need for artists, designers and academic institutions to engage with new forms of creativity but also to be part of a move towards waste reduction awareness. Why is this significant to waste experts?

The utilization of waste materials in art does not necessarily result in a substantial increase in recycling or in the reduction of waste but it can change the way in which waste is perceived. Bringing waste back to people in an attractive form can challenge the thinking of the waste experts and awaken an interest in those unaware of waste management problems.

W2.1.

Art: A way to connect people with the problematic of plastic waste in the sea

C. VAN DER WESTHUYZEN, R. STEGMANN (DE)

W2.2.

From waste-to-art and art-to-waste

C. VAN DER WESTHUYZEN, R. STEGMANN (ZA)

Discussion

17:30 – 18:00 **Coffee Break**

18:00 – 20:00 **Room - MAISTRO**

SESSION A3: **Reinforced Materials**

Chairman: D. Pico (DE)

A3.1.

Experiences with thermal treatment processes such as thermolysis for plastic waste and waste tires

M. GLEIS, P. QUICKER (DE)

A3.2.

Study of the heat transfer during the hydrothermal degradation of an epoxy-amine cured resin

G. SIMENOU JAMBONG, E. LE GAL LA SALLE,
J.-L. BAILLEUL, J. BELLETTRE (FR)

A3.3.

Structure and mechanical properties modification of glass fibres after thermal recycling process

D. PICO, T. GO, A. LUEKING, T. VAD, G. SEIDE,
T. GRIES (DE)

A3.4.

Recycling carbon fibre composites waste from the aerospace industry by thermal treatment

N. GASTELU OTAZUA, A. LOPEZ-
URIONABARRENECHEA, I. DE MARCO, B.M.
CABALLERO (ES)

Discussion

18:00 – 20:00 **Room - SIROCCO**

SESSION B3:

Agro-Industrial Waste

Chairman: A. Polettini (IT)
 C. Dornack (DE)

B3.1.

Agroindustrial residues utilization as a feedstock for biorefineries

M. AKHLAGHI, G. DE GIOANNIS, L. LOMBARDI,
A. MUNTONI, A. POLETTINI, R. POMI, A. ROSSI,
D. SPIGA (IT)

B3.2.

Biodigestion of industrial food waste - example of new design and operation

C. DORNACK (DE)

B3.3.

Microwave treatment of agroindustrial waste prior to anaerobic digestion

F.-M. PELLERA, E. GIDARAKOS (GR)

B3.4.

Analysis of parameter effects in fermentative H₂ production from cheese whey

M. AKHLAGHI, G. DE GIOANNIS, A. MUNTONI,
A. POLETTINI, R. POMI, A. ROSSI, D. SPIGA (IT)

B3.5.

Characterization and methane potential of slaughterhouse waste

I. MOUKAZIS, F.-M. PELLERA, E. GIDARAKOS (GR)

Discussion

18:00 – 20:00 **Room - PUNENTE**

SESSION C3:

Chromium and Arsenic Contaminated Sites

Chairman: S. Pensaert (BE)

C3.1.

Environmental dredging of a chromium contaminated fjord in Valdemarsvik, Sweden

S. Pensaert, H. NOLLET, E. ROMBAUT, X. LEPÈRE (BE)

C3.2.

Evaluation methodology and approach of a preliminary risk assessment study of a full scale industrial installation in the Asopos river basin area

I. Panagopoulos, A. KARAYANNIS, K. KATSIMDES, I. KARKANTZOS, G. GOUVALIAS, P. KASSOMENOS, E. CAROUKIS (GR)

C3.3.

Anaerobic biological processes on the fate and remediation of arsenic in subsurface environment

W. Sun (US)

C3.4.

Is landfilling of arsenic - contaminated soil a safe practice?

J. Kumpiene, L. NIERO, R. RAGA, L. ANDREAS (SE)

C3.5.

Treatment of heavy metal contaminated waters with fluidized granulated iron

R. Mischitz, P. MÜLLER, P. SEDLAZECK, D. HÖLLEN, T. OLBRICH (AT)

Discussion

Wednesday, September 28th-Afternoon

18:00 – 20:00 **Room - LEVANTE**

SESSION D3:

Radioactive Waste

Chairman: D.S. Kosson (US)

D3.1.

Effects of oxidation and carbonation on release of contaminants from a cementitious waste form for low activity radioactive waste

J. BRANCH, A. GARRABRANTS, H. VAN DER SLOOT, K. BROWN, D.S. KOSSON (US)

D3.2.

The elimination of Syria's chemical weapons programme three years later - What have we learned?

R. TRAPP (FR)

D3.3.

Cementitious barriers partnership for evaluating cementitious materials in nuclear waste management applications

D.S. KOSSON, K. BROWN, H. VAN DER SLOOT, J.C.L. MEEUSSEN, P. SEIGNETTE (US)

D3.4.

3D modeling of thawing processes in cryolithic zone around underground nuclear energy facilities

N. MELNIKOV, P. AMOSOV, S. KLIMIN, N. NOVOZHILOVA (RU)

Discussion

Wednesday, September 28th-Afternoon

18:00 – 20:00 Room – LIVA

WORKSHOP 3:

Petroleum Contaminated Sites Management: Successful Stories and Strategies

Coordinated by: M. Aivalioti (GR)

Petroleum components probably represent the most common and widely spread contaminants. The great variability of their properties, behavior and impacts on the environment and human health has led to intensive research. Several methods and technologies have been developed for the characterization, remediation and monitoring of petroleum contaminated soils and waters. However, their adoption and efficiency is highly site dependent. This workshop aims at presenting successful stories of petroleum contaminated sites management, in an effort to draw valuable conclusions as far as the development of productive strategies is concerned.

W3.1.

Treatment of contaminated sites, an introduction

R. STEGMANN (DE)

W3.2.

Oily waste regulations and best available technologies for sustainable development

E. PROTASOVA, R. NAIR, T. BILSTAD (NO)

W3.3.

Full scale remediation of an operating petroleum refinery site: 20 years of experience

E. GIDARAKOS, M. AIVALIOTI (GR)

Discussion

Thursday, September 29th - Morning

08:00 – 09:00 **Registration**

08:30 – 09:00 ***Room - MAISTRO***

Keynote Speaker

Chairman: E. Gidarakos (GR)

Prof. Thomas Christensen

Technical University of Denmark (DK)

“LCA – Life Cycle Analysis Modelling with an
Industrial Waste Example”

Discussion

09:00 – 11:00 **Room - MAISTRO**

SESSION A4:

Characteristics and Treatment of Different Hazardous Waste

Chairman: D. Komilis (GR)

A4.1.

Industrial inorganic hazardous waste - characterization findings based on leaching behavior

A. KORKOLIS, L. CHALARAKIS, S. KAVOURI (GR)

A4.2.

Electrokinetic remediation of surficial sediments from toxic metals and PAHs by the application of periodic voltage

J.N. HAHLADAKIS, A. LATSOS, E. GIDARAKOS (GR)

A4.3.

Characterization and leaching behavior of fly ash and air pollution control residues: Effect of ultrasound pretreatment

Z.H. PHUA, A. GIANNIS, J.-Y. WANG, Z.-L. DONG (SG)

A4.4.

Leaching of heavy metal from coal materials

V. SOULTANIDIS, E.A. VOUDRIAS, I. PAPASPYROS (GR)

Discussion

09:00 – 11:00 Room - SIROCCO

SESSION B4:

Waste –To – Energy

Chairman: K. Lorber (AT)

B4.1.

Innovative pollution abatement systems for waste fuel operated cement kiln

K.E. LORBER, R. SARC (AT)

B4.2.

Modular zero-emission energy plants: bio-residues & waste to energy & synthetic fuel

M. RÜDLINGER, J. ANGLEITNER, N.N. VASEN (CH)

B4.3.

Landfill gas cleaning methods, to natural gas quality in boreal climate

A. IKAUNIEKS, U. PELITE (LV)

B4.4.

Addition of fly ash to the fuel of a rotary kiln used for hazardous waste incineration

F. HUBER, A. PURGAR, D. BLASENBAUER, O. MALLOW, F. WINTER (AT)

Discussion

09:00 – 11:00 Room - PUNENTE

SESSION C4:

Contaminants Behavior

Chairman: Th. Christensen (DK)

C4.1.

Experimental study of long-term behavior of stabilized and solidified mercury under monofill condition

M. SATO, T. ISHIGAKI, K. ENDO, M. YAMADA, M. OSAKO (JP)

C4.2.

Cu, Cr, As and B distribution in soils adjacent to wooden utility poles

E.D. GEZER, D. BAKIR (TR)

C4.3.

Behavior of formaldehyde in soil systems under static and dynamic conditions

T.V. FOUNTOULI, C.V. CHRYSIKOPOULOS (GR)

C4.4.

Literature review (short): Fate and effect of produced water containing EOR-polymers

E. OPSAHL, R. KOMMEDAL (NO)

C4.5.

Computer simulation of dusting at tailing dumps

V. MASLOBOEV, A. BAKLANOV, P. AMOSOV (RU)

Discussion

Thursday, September 29th - Morning

09:00 – 11:00 Room - LEVANTE

WORKSHOP 4:

Hazardous Waste Management: Experience of China

Coordinated by: H. Zhang (CN)
Y. Hu (CN)
W. Sun (US)

People's Republic of China (PRC), which represents the world's most populous and the second largest by land area country, has developed an extremely fast growing economy that is based on industry and manufacturing. This growth is inevitably accompanied by serious environmental issues, which need to be fast and properly managed, no matter how hard or complex this may be.

Especially, as far as hazardous waste management is concerned, much attention has been given and research has been made, providing valuable experience and conclusions. Major and representative examples of hazardous waste management in PRC will be presented during this special workshop, focusing on innovations, special features and developed strategies.

W4.1.

Hazardous waste management in China: Status and challenges

H. ZHANG (CN), Y. HU (CN), W. SUN (US)

Discussion

09:00 – 11:00 **Room - LIVA**

WORKSHOP 5:

Leaching Assessment Framework, Data Management and Modelling (Part I)

Coordinated by: H. Van der Sloot (NL)
D.S. Kosson (US)
S. Thorneloe (US)

Leaching of substances from materials is one of the main mechanisms by which contaminants pose a threat to health and the environment, as most substances need to pass through a liquid phase before leading to an impact. A comprehensive set of tools has been defined that cover the aqueous-solid partitioning and mass transport aspects needed to define a source term for release of constituents from a wide range of materials – such as soil, sludge, compost, sediment, various types of municipal, industrial and hazardous waste, mining waste, preserved wood, treated waste, stabilized waste or a construction material – for assessment of treatment, disposal or use in construction or agricultural applications.

Workshop lectures will introduce leaching assessment using these more robust leaching tests and assessment approaches in a tiered approach. The objective is to balance the effort needed and information gained to efficiently evaluate environmental safety with respect to risks to human health and the environment.

Thursday, September 29th - Morning

W5.1.

LEAF methods to evaluate treatment and develop a source term for assessment of impact from disposal and beneficial use scenarios

D.S. KOSSON , H. VAN DER SLOOT, S. THORNELOE, P. SEIGNETTE, A. GARRABRANTS (US)

W5.2.

Geochemical speciation modelling of hazardous wastes in support of management decisions using LeachXS-ORCHESTRA as part of LEAF

H. VAN DER SLOOT, D.S. KOSSON, P. SEIGNETTE, K. BROWN, J.C.L. MEEUSSEN (NL)

W5.3.

Recent developments in US EPA regarding LEAF and LeachXS

S. THORNELOE (US)

Discussion

11:00 – 11:30 Coffee Break

11:30 – 13:30 **Room - MAISTRO**

SESSION A5:

Plastic Waste Contamination

Chairman: M. Ritzkowski (DE)

A5.1.

The impact of waste management on river and marine litter

M. RITZKOWSKI, C. TRISORIO, K. KUCHTA (DE)

A5.2.

Plastic waste management in a country of 6,000 islands and islets

M. AIVALIOTI, E. GIDARAKOS (GR)

A5.3.

Integra LCA: an innovative tool for health risk assessment of plastic waste

D.A. SARIGIANNIS, S.K. KARAKITSIOS, A. GYPAKIS, E. HANDAKAS, A. GOTTI (GR)

A5.4.

Chemical contamination of material cycles

K. PIVNENKO, E. ERIKSSON, T.F. ASTRUP (DK)

A5.5.

Evaluation of LDPE and ABS degradation by means of NIR spectroscopy

L. PFENNIG, K. KUCHTA, A. PRETTE, S. FIORE (DE)

A5.6.

Plastic pellets sorptive extraction: Low-cost, rapid and efficient extraction of polycyclic aromatic hydrocarbons from environmental waters

C.-E. NIKA, E. YIANTZI, E. PSILLAKIS (GR)

Discussion

11:30 – 13:30 Room – SIROCCO

SESSION B5:

Case Studies on Environmental Impacts

Chairman: P. He (CN)

B5.1.

The EU life programme – over 20 years contributing to better industrial and hazardous waste management

C. DE LA PAZ (BE)

B5.2.

Soil and water pollution due to disposal of olive mill waste waters in unprotected evaporation ponds

V. KAVVADIAS, K. ELAIOPOULOS, SID. THEOCHAROPOULOS, P. SOUPIOS (GR)

B5.3.

Cancer risk from exposure to dioxins and furans after accidental fire in an urban waste recycling facility

D.A. SARIGIANNIS, S.K. KARAKITSIOS, A. GOTTI (GR)

B5.4.

In the aftermath of the "Sea Diamond" shipwreck: Delineating the impact of toxic metals in the sediments of the surrounding wreck area

J.N. HAHLADAKIS, E. GIDARAKOS (GR)

Discussion

11:30 – 13:30 **Room - PUNENTE**

SESSION C5:

Metal Recovery from Special Waste

Chairman: P. Quicker (DE)

C5.1.

Recovery of aluminium from bauxite residue: dissolution and electrowinning of aluminium using Pyrrolidinium Ionic Liquid

P.W.Y. TAM, D. PANIAS, I. GIANNOPOULOU, E. BOURBOS, S. SPATHARIOTIS, V. VASSILIADOU (GR)

C5.2.

Inorganic polymer mortars from bauxite residue and possibility to additionally recover aluminium and sodium

T. HERTEL, C. R. BORRA, B. BLANPAIN, Y. PONTIKES (BE)

C5.3.

Experiences with metal recovery from dry and wet waste incineration ashes

P. QUICKER, M. GLEIS (DE)

C5.4.

Coal recovery from cleaning fine wastes of an Italian mining treatment plant by cycloning

C. TILOCCA, M.T. PILLONI, M. SURRACCO (IT)

C5.5.

Recovery of heavy metals from industrial wastewater – Is it worth it?

S. HEUSS-AßBICHLER, A.L. HUBER, M. JOHN (DE)

Discussion

Thursday, September 29th - Morning

11:30 – 13:30 **Room - LEVANTE**

SESSION D5:

End-Of-Life Vehicles

Chairman: M. Zanetti (IT)

D5.1.

Life cycle assessment applied to vehicles' end-of-life: Case study of FCA panda and EU policy context

S. BOBBA, A. FARINA, G.A. BLENGINI, M.C. ZANETTI, F. BONINO, M. LATTORE (IT)

D5.2.

Employment of end of life tyres in road pavement: The TYREC4LIFE project

M.C. ZANETTI, E. SANTAGATA, B. RUFFINO, D. DALMAZZO, S. FIORE (IT)

D5.3.

Mechanical properties of concrete made with fluff

A.P. FANTILLI, B. CHIAIA (IT)

Discussion

Thursday, September 29th - Morning

11:30 – 13:30 **Room - LIVA**

WORKSHOP 5:

Leaching Assessment Framework, Data Management and Modelling (Part II)

Coordinated by: H. Van der Sloot (NL)
D. Kosson (US)
S. Thorneloe (US)

The attendees can bring their own laptops and install LeachXS Lite with a no cost (free) license key provided at the session. They will learn to import and manage their own data for comparison with existing data in the public LeachXS database in LeachXS Lite. An overview and examples will be provided on the development of screening assessments. In addition, LeachXS - Orchestra will be summarized and demonstrated for developing sources terms based on geochemical speciation-based reactive transport based on a series of field scenarios. Tools for statistical data evaluation and quality control options will also be introduced.

Approximately one-third of the session will be for a discussion among the attendees regarding their challenges and needs with respect to leaching assessment and potential pathways to address them.

Discussion

13:30 – 15:30 **Lunch Break**

15:30 – 16:00 **Poster Session**

Discussion

**Exhibition on
“PLASTIC WASTE POLLUTION
&
ENVIRONMENTAL EFFECTS”**

During “CRETE 2016”, an exhibition focusing on the deleterious effects of plastic waste pollution on the environment will be taking place at the conference venue. General aspects of global plastic production including statistical approaches, toxicity effects, marine pollution by plastic debris, and worldwide management practices are presented by bringing together most of the literature published so far on the topic. Practices for production minimization, innovative techniques for recycling and recovery as well as a guide of personal choices are also debated. The exhibition is organized and created by the School of Environmental Engineering of the Technical University of Crete (Laboratory of Toxic and Hazardous Waste Management).

Thursday, September 29th - Afternoon

16:00 – 16:30

Room - MAISTRO

Keynote Speaker

Chairman: R. Cossu (IT)

Prof. Rainer Stegmann

Hamburg University of Technology (DE)

"Global Pollution, What Can We Do?"

Discussion

16:30 – 17:00

Coffee Break

17:00 – 19:00 **Room - MAISTRO**

SESSION A6:

Construction & Demolition Waste

Chairman: P. Kjeldsen (DK)

A6.1.

Sustainable management of construction & demolition waste – reducing the source to ozone depletion and global warming

P. KJELDSSEN (DK)

A6.2.

Mechanical and durability properties of building elements produced from quarry by-products and recycled aggregates

M. GALETAKIS, C. PIPERIDI, A. SOULTANA, K. KOMNITSAS, D. ZAHARAKI (GR)

A6.3.

Evaluation of the mass balance of the construction and demolition waste management system in Lombardy region (Italy)

S. PANTINI, L. RIGAMONTI (IT)

A6.4.

Heavy metal leaching from wood demolition waste

S. POGARIDOU, E.A. VOUDRIAS, I. PAPASPYROS (GR)

A6.5.

Use of conventional mineral processing procedures and equipment on demolished concrete recycling: An overview

K. SYRMAKEZIS, K.G. TSAKALAKIS, I. SAMMAS (GR)

Discussion

17:00 – 19:00 **Room - SIROCCO**

SESSION B6:

Groundwater & Surface Water Remediation

Chairman: H. Zhang (CN)

B6.1.

The effect of iron reducing bacteria on degradation capacity of nanoscale zero valent iron

L. HONETSCHLÄGEROVÁ, V. LUCIANO, M. KURAŠ (CZ)

B6.2.

Column studies to investigate Cu(II) and Pb(II) removal from aqueous solution using biochar

A. MANTONANAKI, F.-M. PELLERA, E. GIDARAKOS (GR)

B6.3.

Toxic metals removal using mixtures of sewage sludge with compost and olive pomace-continuous and recirculated flow experiments in columns

C. MAKRI, F. SIMANTIRAKI, E. GIDARAKOS (GR)

B6.4.

Ultrasound-assisted extraction of phenolic compounds from olive oil by-products by natural deep eutectic and conventional solvents: A comparison study

S. CHANIOTI, P. SIAMANDOURA, C. TZIA (GR)

B6.5.

Sulfate and metals biodegradation using sugarcane bagasse as substrate: Column experiments

G. TRINDADE, M. BOSCOV, P. HEMSI, D. BUZZI, J. TENÓRIO (BR)

Discussion

17:00 – 19:00 **Room - PUNENTE**

SESSION C6:

Hospital Waste Management

Chairmen: M. Hoffmann (DE)
 A. Zorpas (CY)

C6.1.

Developing an EU standardised approach to vocational qualifications in healthcare waste management

T. MANOLOUDIS, L. KARAGIANNIDIS, S. CROSSETT, J. CROSSETT (GR)

C6.2.

Healthcare waste and recyclable fractions – selected examples at the Jena University hospital

M. HOFFMANN (DE)

C6.3.

Criteria of infectious waste container were revised: Japanese infectious waste container evaluation project

Y. IKEDA, N. TANIKAWA, M. SASAKI (JP)

C6.4.

Management of high contagious infectious waste – measures in Germany using the example of Ebola virus disease

M. HOFFMANN (DE)

C6.5.

Estimate of potential generation of waste antibiotics pills by households in a Brazilian medium-size city

R.G. SOUZA, A.T. PONTES, R.F. SILVA, L.G.Z. CRUZ, A.M. LIMA, C.A.L. VEIGA (BR)

Discussion

17:00 – 19:00 **Room - LEVANTE**

SESSION D6:

Reuse of Industrial Residues

Chairman: G. Lyberatos (GR)

D6.1.

Efficient use of hazardous wastes in cement kilns

C. TSILYANNIS, I. FOTINOPOULOU, M. GEORGIOPOULOU, G. LYBERATOS (GR)

D6.2.

Transforming bauxite residue into soil

P. HENNEBERT, C. CHEN, F. SAID ALI MOHAMED, L. POIZAT (FR)

D6.3.

Valorization of red mud as raw material in the production of belite cement clinkers

L. PÉREZ-VILLAREJO, R.-I. IACOBESCU, E.-G. IACOBESCU, A. CHRISTOGEROU, D. KOUMPURI, G.-N. ANGELOPOULOS (ES)

D6.4.

Life cycle assessment of the reuse of fly ash from paper sludge combustion in cement formulations

L. TOSTI, A. VAN ZOMEREN, J.R. PELS, A. DAMGAARD, R.N.J. COMANS (NL)

D6.5.

Evaluating the effectivity of using natural fishbone hydroxyapatite on lead stabilization in municipal solid waste incineration (MSWI) fly ash

Y. MU, A. SAFFARZADEH, T. SHIMAOKA (JP)

Discussion

17:00 – 19:00 Room - LIVA

WORKSHOP 6:

Hyperspectral Imaging and its Applications in Industrial and in Hazardous Waste Characterization and Handling

Coordinated by: G. Bonifazi (IT)
S. Serranti (IT)

Chemical Imaging is an emerging, and dramatically growing, technology based on the utilization on integrated hardware and software (HW&SW) architecture embedding conventional imaging and spectroscopy to attain both spatial and spectral information from “a scene”. Workshop lectures will introduce and critically analyze the basics of this technique, the advantages, the main sample analysis methods and the accessories used to obtain representative spectra of analytical samples. New ideas and concepts will be also presented a shared with the attendees specifically focusing on practical utilization and implementation both in terms of “hand handled” devices and/or in an “on-line” or “in-line” detection/control perspective.

W6.1.

A fast and reliable approach for asbestos recognition in complex matrices adopting an Hyperspectral Imaging (HSI) based approach
G. BONIFAZI, G. CAPOBIANCO, S. SERRANTI (IT)

Discussion

19:30 – 23:30

Visit of the exhibition in Chania City “WASTE –REINVENTED Art, Design, Fashion”

The IWWG ART Gallery participates at CRETE 2016, with a real exhibition of art, design, photography and fashion from up-cycled waste material!

It will be a major achievement for the Gallery to step out of the virtual dimension and take on a tangible form, when selected items from the on-line collection will be showcased in the Sailing Club Café located in the picturesque harbor of Chania.

The location of the exhibition also ties in with the main theme of the CRETE conference, as particular attention is given to the problematic of plastic pollution in the sea.

What better way than through waste, creatively transformed into fascinating art, to capture the attention of the public and build an awareness of the current overproduction/overconsumption crisis, the ruthless contamination and escalating degradation of our environment?

In CRETE 2016, the Gallery sails on towards uncharted seas, with the mission to inform, engage and connect with the widest audience, in search of better waste reduction solutions and a cleaner future.

Friday, September 30th – Morning

08:00 – 09:00 **Registration**

08:30 – 09:00 ***Room - MAISTRO***

Keynote Speaker

Chairman: E. Gidarakos (GR)

Prof. George Angelopoulos

University of Patras (GR)

“Utilization of High-Volume Industrial By-
Products”

Discussion

Friday, September 30th – Morning

09:00 – 11:00

Room - MAISTRO

SESSION A7:

Recycling from Industrial Waste

Chairman: Th. Lekkas (GR)

A7.1.

Recycle for what its worth

TH. LEKKAS, Y. RAZIS, I. KOMIS, T. ARVANITIS
(GR)

A7.2.

*Waste management in Primorskiy region,
Russia: Waste-tracking and recycling system
in the context of the European experience*

V.I. PETUKHOV, O.I. LITVINETS, I.V.
MOSKOVAYA, V.A. SMOLIN, A.V. TASKIN, A.S.
KHOLODOV, S.I. IVANNIKOV (RU)

A7.3.

*Pulp mill bio-sludge recycling – sludge
properties and recycling*

R. NORRGREN, M. FRÖLING, O. BJÖRKQVIST
(SE)

A7.4.

*The North-Moravian blast-furnace slag as an
admixture for portland cement*

M. BOHÁČ, T. STANĚK (CZ)

Discussion

Friday, September 30th – Morning

09:00 –11:00

Room - SIROCCO

SESSION B7:

Treatment of Contaminated Sites

Chairman: W. Sun (US)

B7.1.

Sustainable remediation design for a clay target shooting range

D.A. WOODS, J.M. NASH (AU)

B7.2.

A macroscopic theoretical study of dielectric barrier discharge plasma reactor for soil remediation

N. BALI, C.A. AGGELOPOULOS, E.D SKOURAS, V.N BURGANOS, C.D. TSAKIROGLOU (GR)

B7.3.

The role of protein oxidation in the toxicity of inorganic nanoparticles

W. SUN (US)

B7.4.

Soil degradation at high depths at olive mill waste disposal areas: The case of soil organic matter and polyphenols

M.K. DOULA, K. KOMNITSAS, A.A. ZORPAS, V. KAVVADIAS, D. ZAHARAKI (CY)

Discussion

Friday, September 30th – Morning

09:00 –11:00

Room - PUNENTE

SESSION C7:

Oil Field Issues

Chairman: T. Bilstad (NO)

C7.1.

Anaerobic treatment of slop water

A. WOLD, L. YDSTEBØ, R. KOMMEDAL, M. LØKLINGHOLM, T. BILSTAD (NO)

C7.2.

Petcoke-derived functionalized activated carbon as support in a bifunctional catalyst for tire oil hydroprocessing

I. HITA, R. PALOS, J.M. ARANDES, J.M. HILL, P. CASTAÑO (ES)

C7.3.

Applicability and costs of nanofiltration for produced water reinjection for EOR

R. NAIR, T. BILSTAD, E. PROTASOVA (NO)

C7.4.

Oil pollution risk assessment of Primorsky Krai (Russia) coast

I. BLINOVSKAIA, D. MOROZ (RU)

Discussion

Friday, September 30th – Morning

09:00 –11:00

Room - LEVANTE

SESSION D7:

Management of Mining Waste

Chairman: K. Komnitsas (GR)

D7.1.

Current issues in a former pyrite mine closed half century ago: Management and remediation

B. CHEVROL, T. GISBERT, M. BYRNE, P. COLIN (FR)

D7.2.

Assisted phytoextraction of lead and zinc mine sites using native plants

T. LAI, A. CAO, G. CAPPAL, A. CARUCCI (IT)

D7.3.

The problems of mining industry wastes in Trans-Baikal region

K. RAZMAKHININ (RU)

D7.4.

Extractive industry: Best available technologies in mining waste management

A. VALOUMA, E. GIDARAKOS (GR)

Discussion

Friday, September 30th – Morning

09:00 – 11:00 **Room - LIVA**

SESSION E7:

E-Waste Management

Chairman: K. Lasaridi (GR)
 K. Abeliotis (GR)

E7.1.

State-of-the-art review on waste of electrical and electronic equipment reuse in the framework of the LIFE-REWEEE project

K. LASARIDI, C. CHRONI, K. ABELIOTIS, M. INTZELER, CH. ANGELAKOPOULOS (GR)

E7.2.

Comparative life cycle analysis of the production of SMCO rare earth permanent magnets and NDFEB rare earth permanent magnets

G. BAILEY, K. VAN ACKER (BE)

E7.3.

Evaluation of recovery potential for precious and rare earth metals from e-waste

M. ŞAHAN, B. DEMIREL (TR)

E7.4.

Benefits of improved fluorescent lamps collection: Experiences from pilot schemes in mainland China

P. BEIGL, N. UNGER, G.J. SHAN, J.H. LI, S. SALHOFER (AT)

E7.5.

Recovery of valuable and rare earth metals from e-waste pilot project in Serbia

P. JOVANIĆ (RS)

Discussion

11:00 – 11:30 **Coffee Break**

Friday, September 30th – Morning

11:30 –13:30

Room - MAISTRO

SESSION A8:

New Strategies in Special Waste Management

Chairman: R. Cossu (IT)

A8.1.

Hazardous waste in new trends of circular economy

S. KALAMBURA, A. RACZ (HR)

A8.2.

Impact of dry recyclables collection schemes on plastics recycling in the UK: Circular economy highly depends on collection logistics

J.N. HAHLADAKIS, M. ATSEYINKU, E. IACOVIDOU, P. PURNEL, P.T. WILLIAM, C.A. VELIS (GB)

A8.3.

Development of valorization options for lignite fly ash

V. SAVVILOTIDOU, E.GIDARAKOS (GR)

A8.4.

Characterization of porous ceramics produced using ash from incineration of hospital wastes, marine sediments and coal fly ash

A. KRITIKAKI, E. EMMANOUELIDES, K. KOMNITSAS (GR)

A8.5.

Impact of the new approach of hazardous assessment to an effective waste management

P. MARABOUTIS, E. NIKOLAOU, N. POULIMENOU (GR)

Discussion

Friday, September 30th – Morning

11:30 –13:30

Room - SIROCCO

SESSION B8:

Polymer Production from Waste

Chairman: P.S. Calabrò (IT)
Y. Pontikes (BE)

B8.1.

Quartz glass cullet as a pore forming precursor in the synthesis of inorganic materials

L. ARNOUT, A. PEYS, B. BLANPAIN, Y. PONTIKES (BE)

B8.2.

Conversion of Fe, Si- rich slag into a porous inorganic polymer

L. KRISKOVA, Y. PONTIKES (BE)

B8.3.

Properties of geopolymer concrete with coarse sulphur slime aggregate

D. VAIČIUKYNIENĖ, V. BOCULLO, A. KANTAUTAS (LT)

B8.4.

Spectroscopic studies of various alkali activated binders produced from wastes

D. ZAHARAKI, K. KOMNITSAS (GR)

B8.5.

One-part inorganic polymers from residues only: Biomass ash activation of Fe-rich slag

A. PEYS, A. MOBILI, L. ARNOUT, H. RAHIER, B. BLANPAIN, Y. PONTIKES (BE)

Discussion

11:30 –13:30

Room - PUNENTE

SESSION C8:

Industrial Wastewater Treatment II

Chairman: D. Mantzavinos (GR)

C8.1.

Degradation of pharmaceuticals by UV-C/Persulfate in aqueous solutions

C. DROSOU, K. TYROVOLA, N. XEKOUKOULOTAKIS (GR)

C8.2.

Application of ionizing radiation for wastewater treatment for radiolytic removal of selected organic pollutants

M. TROJANOWICZ, A. BOJANOWSKA-CZAJKA (PL)

C8.3.

Influence of nanoparticles of zinc oxide in anaerobic systems of wastewater treatment

M. MARTÍNEZ-RAMÍREZ, A. BERNAL-MARTÍNEZ, G. CUEVAS-RODRÍGUEZ (MX)

C8.4.

Comparative study of ZnO and TiO₂ photocatalysts for the UV-assisted degradation of methylene blue in water and influence of surface defects on the photo-degradation rate

C.A. AGGELOPOULOS, M. DIMITROPOULOS, K. GOVATSI, C.D. TSAKIROGLOU, S.N. YANNOPOULOS (GR)

Discussion

Friday, September 30th – Morning

11:30 –13:30

Room - LEVANTE

SESSION D8:

Medical and Hospital Waste: Status and Challenges in Greece (in Greek)

**Ιατρικά και Νοσοκομειακά Απόβλητα:
Υφιστάμενη κατάσταση στην Ελλάδα**

Chairmen: E. Voudrias (GR)
G. Kotini (GR)

D8.1.

Healthcare waste management from the point of view of circular economy

E. VOUDRIAS (GR)

D8.2.

Healthcare waste generation worldwide and its dependence on social and economic factors

S. GERASSIMIDOU, M. MINOGLOU, A. DROUZA, D. KOMILIS (GR)

D8.3.

Social attitude and behavior in the framework of the disposal of household pharmacies

A.A. ZORPAS, M. DEMITRIOU, I. VOUKKALI, M.K. DOULA (GR)

D8.4.

Planning integrated management of hazardous waste health-care units. Best practices. A proposal of Hellenic environmental inspectorate (Southern Greece)

V. DALAMAGAS, A. DROUZA, S. ELETHERIADOU, E. GIDARAKOS, G. KOTINI (GR)

D8.5.

Hazardous medical waste treatment- case study of medical waste incinerator in Ano Liossia, Attica, Greece

G. BOUBOUKAS, C. ZACHAROPOULOS, N. KOTHRIS (GR)

Discussion

Friday, September 30th – Morning

11:30 –13:30 **Room - LIVA**

SESSION E8:

E - Waste Treatment & Recycling

Chairman: S. Salhofer (AT)

E8.1.

E-waste implementation TOOLKIT – EWIT

B. KOPACEK, I. CARPUSO (AT)

E8.2.

Optimisation in the collection of WEEE

J. HOBORN, K. KUCHTA (DE)

E8.3.

Development and demonstration of waste electrical and electronic equipment (WEEE) prevention and reuse paradigms

K. LASARIDI, C. CHRONI, K. ABELIOTIS, M. INTZELER, CH. ANGELAKOPOULOS (GR)

E8.4.

Intelligent disassembly of components from printed circuit boards to enable re-use and more efficient recovery of critical metals

B. KOPACEK (AT)

E8.5.

Comparison of the hot plate and microwave digestion methods for rare earth elements from spent fluorescent lamp powders

M.A. KÜCÜKER, M. VAQUERANO, K. KUCHTA (DE)

Discussion

13:30 – 15:30 Lunch Break

15:30 – 16:00

Poster Session

Discussion

Exhibition on “PLASTIC WASTE POLLUTION & ENVIRONMENTAL EFFECTS”

During “CRETE 2016”, an exhibition focusing on the deleterious effects of plastic waste pollution on the environment will be taking place at the conference venue. General aspects of global plastic production including statistical approaches, toxicity effects, marine pollution by plastic debris, and worldwide management practices are presented by bringing together most of the literature published so far on the topic. Practices for production minimization, innovative techniques for recycling and recovery as well as a guide of personal choices are also debated. The exhibition is organized and created by the School of Environmental Engineering of the Technical University of Crete (Laboratory of Toxic and Hazardous Waste Management).

Friday, September 30th - Afternoon

16:00 –18:00

Room - MAISTRO

SESSION A9:

Toxicology

Chairman: G. Bonifazi (IT)

A9.1.

Paired data on ecotoxicity and chemical analyses of complex waste materials

R. WELTENS, E. ROSSI, G. VANERMEN, K. TIREZ (BE)

A9.2.

Assessing health impacts of hazardous waste: The exposome paradigm

D.A. SARIGIANNIS, S.K. KARAKITSIOS, A. GOTTI (GR)

A9.3.

Ecotoxicological tests for drill cuttings cleaning technology – a new approach using protozoa

A. BAGI, S. SANNI, D.M. PAMPANIN, M. BERG-JENSEN, C. UHLEN, A. GOMIERO (NO)

A9.4.

Practical and cost effective toxicity tests for the evaluation of the environmental hazard of solid waste

V. TSIRIDIS, G. PERSOONE (GR)

A9.5.

Uncontrolled release of hexachlorobenzene (HCB) and its impact on environment

K.E. LORBER, R. SARC (AT)

Discussion

Friday, September 30th - Afternoon

16:00 –18:00 **Room - SIROCCO**

SESSION B9:

Sewage Sludge Treatment

Chairman: D. Lekkas (GR)

B9.1.

Occurrence and fate of priority organic pollutants during wastewater sludge treatment

R. KOMMEDAL, L. YDSTEBØ, T. BILSTAD (NO)

B9.2.

Comparative study - pharmaceutical residues in wastewater and sludge from a micoralgae plant and an activated sludge process

J. OLSSON, A. JUSZKIEWIC, S. SCHWEDE, E. NEHRENHEIM, E. THORIN (SE)

B9.3.

Co-pyrolysis of sewage sludge and MSWI fly ash for simultaneous heavy metal stabilization and dioxins detoxicity

Y. HU, F. ZHOU, F. CHEN, D. CHEN (CN)

B9.4.

Pilot scale co-composting of municipal solid waste and sewage sludge in Kalamata, Greece

G. KAZAMIAS, E.E. KLONTZA, D. LEKKAS (GR)

Discussion

Friday, September 30th - Afternoon

16:00 –18:00

Room - PUNENTE

WORKSHOP 7:

Valorization of Red Mud for Advanced Wastewater Treatment

Coordinated by: D. Mantzavinos (GR)
G.N. Angelopoulos (GR)

Based on the principle that the natural resources of our planet are limited, it is imperative to (i) transform wastes and by-products into new, high-added value products and energy and (ii) consider them as national/European resources. In this perspective, this special session will address strategic research and policies in biomass, industrial, agro-industrial and municipal solid wastes and by-products valorization to produce new materials with high-added value, gaseous and liquid biofuels, electricity, liquid and solid fertilizers, as well as the sustainable management of resources. The session will also address the concept of INVALOR (Institute of Waste Valorization and Sustainable Management of Resources), a distributed research infrastructure supporting research and development in waste valorization and sustainable management of natural resources.

Discussion

Friday, September 30th - Afternoon

16:00 – 18:00 **Room - LEVANTE**

WORKSHOP 8:

Innovative Recovery Strategies of Critical Metals from Waste of WEEE

Chairmen: K. Kuchta (DE)
 J. Hobohn (DE)

Critical metals (CM) are essential for the production of e-equipment. An increasing demand for green and information technology products could lead to a scarcity of these resources and a dependency on a very few supply countries. Currently the extraction of CM from ores is energy intensive and involves environmental risks due to the toxic chemicals involved. The session has the objective to discuss options in order to reduce environmental hazards.

W8.1.

Biorecovery of metals from electronic waste

A. İŞILDAR, J. VAN DE VOSSENBERG , E.D. VAN HULLEBUSCH, E.R. RENE, P.N.L. LENS (NL)

W8.2.

Mobile hydrometallurgy to recover rare and precious metals from WEEE

B. KOPACEK (AT)

W8.3.

Recovery of rare earth elements - optimized elemental analysis of fluorescence lamp shredder waste

O. KRÜGER, J. HOBHOM, K. KUCHTA, S. VAN WASEN, C. ADAM (DE)

W8.4.

Indium applications in WEEE: possible recovery paths
V. SAVVILOTIDOU, J. HAHADAKIS, E. GIDARAKOS (GR)

Discussion

18:00 – 18:30 **Coffee Break**

CLOSING SESSION

18:30 – 20:00 **Room - MAISTRO**

Chairman: R. Stegmann (DE)

In the past, plastic littering in the environment was seen mostly as something that disturbed the aesthetics of landscapes, beaches and oceans and not in terms of the severely negative impact on the quality of water, soil and air. This view has changed dramatically but perhaps too late. We now know that plastic corrodes into fine particles under the influence of natural radiation, chemical and physical processes, bacterial activity and other factors. Through these processes plastic enters the food chain with substantial negative effects on marine flora and fauna, as well as on human health. During the Roundtable experts from different disciplines will interactively discuss this topic, and invite the participation of the audience, with the aim to elaborate steps towards solutions.

ROUND TABLE DISCUSSION

***“The Plastic Effect: How is Plastic Pollution
Changing the Environment?”***

POSTER AWARDS

Evaluating Committee: P.J. He (CN)
 K.E. Lorber (AT)

21:00 – Gala Dinner

PHOTO CONTEST AWARDS

Posters

- P1.** *Towards in-line identifying and sorting of textile waste for small and medium enterprises*
K. CURA, H. RUTILA (FI)
- P2.** *Ecodesign methodology for recyclable textile coverings used in the European textile industry*
U. RÜBSAM, A. SCHRÖTER, D. PICO, Y.-S. GLOY, T. GRIES (DE)
- P3.** *Total residual output flows of the economy: Beyond the standard waste statistics*
J. KOVANDA (CZ)
- P4.** *Energy management optimization in camp it infrastructure based on a demand response perspective*
N. KAMPELIS, K. GOBAKIS, D. KOLOKOTSA, A. FERRANTE, K. KALAITZAKIS (GR)
- P5.** *Hybrid-process development for efficient carbon fibre waste processing*
C. LÜTKE, V. NIEBEL, T. GRIES, A. ENDRES, D. TEUFL, D. PICO (DE)
- P6.** *Towards circular economy via industrial symbiosis together with companies and students*
S. AUTIO, K. CURA (FI)
- P7.** *Milled electrical cable waste additive effect on durability properties of concrete*
A. AUGONIS, D. VAIČIUKYNIENĖ, A. GRINYS, E. IVANAUSKAS, V. SASNAUSKAS (LT)
- P8.** *Chemical treatment strategies: dealing with 2nd generation waste photovoltaic panels*
A. ANTONIOU, V. SAVVILOTIDOU, E. GIDARAKOS (GR)
- P9.** *Pure silicon and hydrogen from waste photovoltaic panels*
O. SOLCOVA, Y. MALETEROVA, P. DYTRYCH, J. BUMBA, F. KASTANEK (CZ)
- P10.** *Bioleaching of copper from electronic waste by acidithiobacillus ferrooxidans and leptospirillum ferrooxidans.*
C.G.A. ROSARIO, S.K. UTIMURA, D.C.R. ESPINOSA, J.A.S. TENÓRIO (BR)

Posters

- P11.** *Leaching assessment of toxic metals derived from computer components*
CH. PALANDRIS, A. KOUSAITI, E. GIDARAKOS (GR)
- P12.** *Optimization of WEEE collection to facilitate recovery of rare earth and other critical metals*
K. LASARIDI, C. CHRONI, K. ABELIOTIS, M. VILLARES, A. JANDRIC, J. HOBHOM, K. KUHTA (GR)
- P13.** *Treatment processes in 1st generation waste photovoltaic panels*
A. LAKIOTAKI, V. SAVVILOTIDOU, E. GIDARAKOS (GR)
- P14.** *IR-catalyzed N₂O decomposition: Effect of the IR particle size and metal-support interactions*
I.V. YENTEKAKIS, G. GOULA, P. PANAGIOTOPOULOU, S. KAMPOURI, M.J. TAYLOR, G. KYRIAKOU, R.M. LAMBERT (GR)
- P15.** *Ecotoxic effects of land application of sewage sludge*
F. SAKAVELI, V. TSIRIDIS, M. PETALA, E. DARAKAS (GR)
- P16.** *Speciation of trace elements in municipal sewage sludge*
R. PÖYKIÖ, O. DAHL, M. MÄKELÄ (FI)
- P17.** *Vineyard wastes as a promising fuel for large scale combustion units*
D. VAMVUKA, M. TRIKOUVERTIS, D. PENTARI, K. KOMNITSAS (GR)
- P18.** *Characterisation of debarking residue for utilization aspects*
R. PÖYKIÖ, O. DAHL, H. NURMESNIEMI (FI)
- P19.** *Implementation of the waste water purification technology-ultrafiltration-to the production of highly purified consumer items from agro waste saffron*
M. ZARKOGIANNI, E. KARANIKAS, N. NIKOLAIDIS (GR)
- P20.** *Ageing study of ion-exchange membranes: Electrical properties*
J. M.S. JESUS, T. SCARAZZATO, C.A. ROSÁRIO, J.A.S. TENÓRIO, D.C.R. ESPINOSA (BR)
- P21.** *Heteroaggregation of graphene oxide nanoparticles and kaolinite colloids*
N.P. SOTIRELIS, C.V. CHRYSIKOPOULOS (GR)

Posters

- P22.** *The influence of milling for phosphogypsum and zeolite system*
D. NIZEVIČIENĖ, D. VAIČIUKYNIENĖ, V. VAITKEVIČIUS (LT)
- P23.** *Comparison between precipitation and solvent extraction for iron removal of a water mining waste*
P. ALIPRANDINI, M.M. JIMÉNEZ CORREA, C.G.A. ROSARIO, J.A.S. TENÓRIO, D.C.R. ESPINOSA (BR)
- P24.** *Utilization of red mud and granite waste in the manufacture of ceramics*
I. GONZALEZ-TRIVIÑO, J. PASCUAL COSP, B. MORENO MORALES, M. BENÍTEZ-GUERRERO, L. PÉREZ-VILLAREJO (ES)
- P25.** *Clay based construction - ceramics by incorporating sugar production wastes and petcoke*
T. DINTSKOU, I. FULAKTOU, S. LAMPRAKOPOULOS, X. SPILIOTIS (GR)
- P26.** *An investigation of polymer waste streams in the tourist area of Baikal Region*
O.ULANOVA, V. STAROSTINA (RU)
- P27.** *Incorporation of aluminum electrostatic painting wastes into red ceramics*
V. PASCHALIS, S. LAMPRAKOPOULOS, X. SPILIOTIS (GR)
- P28.** *The influence of STFFNESS interface on layered floor plates structural rapheme using industrial waste in the middle layer*
R. BISTRICKAITĖ, D. VAIČIUKYNIENĖ, A. AUGONIS, D. MARTINAVIČIUS, G. RINKEVIČIUS (LT)
- P29.** *Environmental risk assessment of heavy metals leaching from aerated lagoon sediment*
R. PÖYKIÖ, O. DAHL (FI)
- P30.** *Impact of geogenic Cr(VI) contamination on human health – risk assessment of carrot consumption*
M.A. LILLI, N.P. NIKOLAIDIS, N. KALOGERAKIS, G. KARATZAS (GR)
- P31.** *Cd, Pb and Ni accumulation in pelargonium graveolens grown in heavy metal-contaminated soils*
A. PAPA FILIPPAKI, M. BOLANAKI, I. KASAPAKIS, N. LYDAKIS-SIMANTIRIS (GR)

Posters

- P32.** *Transport properties of copper-hedp complexes through ion exchange membranes for copper plating wastewater treatment*
T. SCARAZZATO, J.M. SILVA, F.C.H. BERTIN, C.A. ROSARIO, Z. PANOSSIAN, V. PÉREZ-HERRANZ, J.A.S. TENÓRIO, D.C.R. ESPINOSA (BR)
- P33.** *An analytical method for trace levels of hexavalent chromium in stack gas using ion chromatography*
Y. MIYAKE, M. TOKUMURA, Y. IWAZAKI, Q. WANG, T. AMAGAI, Y. HORII, H. OTSUKA, N. TANIKAWA, T. KOBAYASHI, M. OGUCHI (JP)
- P34.** *Accumulation of heavy metals in unicellular photosynthetic algae*
M. BOLANAKI, L. RAISI, E. KATSIVELA, F. VERVERIDIS, S. PERGANTIS, M. DASSENAKIS, G. K. PAPADOPOULOS, N. LYDAKIS-SIMANTIRIS (GR)
- P35.** *Adsorption of nickel and cobalt in the acid chelating resin Amberlite IRC 748*
M.M. JIMÉNEZ CORREA, P. ALIPRANDINI, D. O. ABREU, F.P.C. SILVAS, C.G.A. ROSARIO, J.A.S. TENORIO, D.C.R. ESPINOSA (BR)
- P36.** *Use of LNAPL transmissivity to evaluate LNAPL recoverability in a heterogeneous site in Western Australia*
E. GATSIOS, J.L. RAYNER, C.D. JOHNSTON (AU)
- P37.** *Extraction of polychlorinated biphenyls (PCBS) and dibenzyl raphemee (DBDS) from transformer oils*
F. KASTANEK, P. KASTANEK, Y. MALETEROVA, M. MATEJKOVA, O. SOLCOVA (CZ)
- P38.** *The reuse of asbestos-cement products*
T. STANĚK, M. BOHÁČ (CZ)
- P39.** *EOL boat composite products characterization by hyperspectral imaging*
S. SERRANTI, G. BONIFAZI, G. CAPOBIANCO, V. LE DONNE (IT)
- P40.** *Boron-doped diamond anodic oxidation of bisphenol A*
Z. FRONTISTIS, M. YAZIRDAGI, Z. KILINC, A. KATSAOUNIS, D. MANTZAVINOS (GR)

Posters

- P41.** *UV photolysis of cephalosporins in aqueous solutions*
C. MOURTI, C. DROSOU, K. TYROVOLA, N.P. XEKOUKOULOTAKIS (GR)
- P42.** *Assessment of mercury content in landfill leachate aiming fermentative hydrogen production*
I.A DA SILVA, J. K. DE OLIVEIRA, V. REGINATTO, M.A.M.S. DA VEIGA (BR)
- P43.** *Study of hydrometallurgical route aiming silver and tin extraction from PCB solder waste*
M. P. K. CALDAS, C. G. A. ROSARIO, V. T. MORAES, J. A. S. TENÓRIO, D. C. R. ESPINOSA (BR)
- P44.** *Effect of ZnO nanoparticles on nutrients removal in activated sludge reactor*
D.A. NICASIO TOVAR, P.L.A. CERVANTES AVILES, A. BERNAL-MARTÍNEZ, G. CUEVAS-RODRÍGUEZ (MX)
- P45.** *Study of the gasification process of refuse derived fuels through simulation in a bubbling fluidized bed reactor*
I. SÁNCHEZ-LÓPEZ, A. GALLARDO IZQUIERDO (ES)
- P46.** *Design of management plan for special waste generated in a slaughterhouse in Pénjamo (Mexico)*
E.L. PIÑA, E. TURCOTT, A. BERNAL-MARTÍNEZ, G.C. TORRE-MARÍN, G. CUEVAS-RODRÍGUEZ (MX)
- P47.** *Behavior of pollutants in a soil contaminated by the destruction of arsenical shells from the great war: A mesocosm study*
H. THOUIN, S. DUPRAZ, L. LE FORESTIER, P. GAUTRET, D. HUBE, C. JONGY, F. BATTAGLIA-BRUNET (FR)
- P48.** *Leachate treatment of the landfill from Guanajuato, México in a membrane biological reactor (MBR-Hybrid)*
M.F. PÉREZ-BERNAL, A.Í BERNAL-MARTÍNEZ, G. CERVANTES, G. CUEVAS-RODRÍGUEZ (MX)
- P49.** *Column biosorption performance of modified biomass from ficus religiosa for Pb (II) and Cb(II) ions*
M. ATHAR, U. FAROOQ, M. DILSHAD, M. SALMAN, N. MAKSHOOF (PK)
- P50.** *Biosorbent from ficus religiosa for green removal of Pb(II) and Cd(II) from aqueous solutions*
U. FAROOQ, A. R. QURESHI, M. ATHAR, M. SALMAN, N. REHMAT (PK)

Exhibition Posters

“Plastic Waste Pollution & Environmental Effects”

The exhibition focus on the deleterious effects of plastic waste pollution on the environment. General aspects of global plastic production including statistical approaches, toxicity effects, marine pollution by plastic debris, and worldwide management practices are presented by bringing together most of the literature published so far on the topic. Practices for production minimization, innovative techniques for recycling and recovery as well as a guide of personal choices are also debated.

Poster titles:

- *Plastic Production in Numbers*
- *Case Studies: Plastic Bottles*
- *Toxicity of Plastic Products*
- *Potential for Plastics Production Minimization*
- *Innovative Plastics Collection Practices*
- *Plastics Recycling*
- *Plastics in the Sea Environment*
- *Guide of Personal Choices*

The exhibition is organized and created by the Laboratory of Toxic and Hazardous Waste Management of the Technical University of Crete, by the co-authors:

M. Aivalioti, E. Kastanaki, A. Kousaiti, C. Makri, I. Moukazis, P. Papoulas, F.-M. Pelleri, V. Savvilotidou, A. Valouma, E. Gidakos.

Social Events Program

Sunday, 25th September & Monday, 26th of September

Sailing Day Trip

Starting at 10:00 am from Old Harbour of Chania and arrive at 17:00 pm.

Scuba Diving Experience

Starting at 10:00 am from the diving center located at Kolymvari. After your daily recreational diving activities transportation to your hotel.

Tuesday, 27th of September, 20:00

Welcome Ceremony

A relaxing atmosphere by the Avra Imperial Hotel's swimming pool is a great start for meeting old and new colleagues.

Wednesday, 28th of September, 19:30

Traditional Cretan Night

All delegates are invited to enjoy the "Traditional Cretan Night" with music and folk dancing. Join us, dance and taste traditional Cretan dishes, sweets and drinks. At 19:30 pm, the departure from Conference Venue to a traditional village, by bus will begin. The starting of the Cretan night is estimated at 21:00 pm.

Social Events Program

Thursday, 29th of September, 19:30

Visiting of the “Waste-Reinvented” Exhibition

A fascinating exhibition of art, design, photography and fashion from up-cycled waste material approaches creativity and purposely encourages positive change through education and inspiring new thinking on waste management and reuse/recycling. It will be a major achievement for the IWWG Art Gallery to step out of the virtual dimension and take on a tangible form, when selected items from the on-line collection will be showcased at the Sailing Club Café, a beautiful space in the picturesque Venetian harbor of Chania. Departure from Avra Imperial Conference Venue, by bus at 19:30 pm and departure from Chania city back to the Venue location at 23:30 pm.

Friday, 30th of September, 21:30

Gala Dinner

As always, the end of the Conference will be properly celebrated. All delegates are invited to a formal dinner at Avra Imperial Hotel Venue. Music, modern and traditional dances will accompany us during the event. The cost of the Gala Dinner is included in the registration fee. Tickets for non-delegates will be available at the Secretariat.

Social Events Program

Saturday, 1st October, 10:00

Excursion to the Beautiful Town of Palaiochora, Day Trip

Palaiochora is a coastal town located on the southwest coast of Crete. It is built on a peninsula between two picturesque bays, and as it borders the Libyan Sea it is justly regarded as the “Libyan Bride” and “Land of the Sun”. The western bay is defined by a beautiful artificial port, with the navy lighthouse. On the west of the port the thick sand beach of Paleochora town is located. Leisure time can also be spent hiking with walks near the Venetian fortress of Fortezza. In the town you will find many restaurants and tavernas that offer a wide variety of delicious dishes like fresh fish and locally roasted goat. We will start at 10:00 am from “Avra Imperial Hotel” going southwest. Lunch at a Cretan family tavern. Arrival at the hotels at 19:00 pm.

Sailing Day Trip

Starting at 10:00 am from Old Harbour of Chania and arrive at 17:00 pm.

Scuba Diving Experience

Starting at 10:00 am from the diving center located at Kolymvari. After your daily recreational diving activities transportation to your hotel.

Scientific Support



Future waste management programs must be put into practice in conjunction with sound policies that restrict the use of fossil fuels and natural resources and contribute to the reduction of emissions into the environment. Such a strategy should be based in a sound scientific basis, without ideology, politics or financial interests. It should be implemented on a worldwide basis and not limited to industrialized countries. To achieve this goal, existing waste management options must be evaluated for implementation, new strategies must be formulated and new, innovative solutions have to be found.

Based on this need, the IWWG (International Waste Working Group) was established in 2002, not to contrast or to compete with existing professional organizations but to set up a network with existing national and international organizations with similar goals.

The IWWG aims to provide an intellectual platform to encourage and support integrated and sustainable waste management and to promote practical scientific development in the field.

For further information:

www.iwwg.eu

Upcoming Organized Event

Info: www.venicesymposium.it



Conference Structure

Tuesday, 27 September 2016					
Afternoon	Training Course 1: Special Waste to Energy K. LORBER & R. SARC - <i>Montan University of Leoben (AT)</i>				
	Training Course 2: Remediation of Old Landfills M. RITZKOWSKI - <i>Hamburg University of Technology (DE)</i>				
	REGISTRATION - WELCOME COCKTAIL				
Wednesday, 28 September 2016					
Morning	OPENING CEREMONY OPENING SESSION E. GIDARAKOS (GR) - "Hazardous Waste Out of Control Around The World" R. STEGMANN (DE) - " Make IWWG a Strong, High Quality Solid Waste Society" R. COSSU (IT) - "Back to Earth Alternatives in Waste Management Strategies Based on Circular Economy"				
	Keynote Speaker S. WERNER - <i>Federal Environment Agency (DE)</i> "Strategies to Combat Marine Litter - From Theory to Action"				
	Session A1: Hazardous Waste Regulation	Session B1: Biorefineries	Session C1: Landfill Issues	Session D1: Management of Contaminated Sites in Greece (<i>in Greek</i>)	Workshop 1: Controlling Mercury in the Waste Stream
	Session A2: Military Waste	Session B2: Asbestos	Session C2: Industrial Wastewater Treatment I	Session D2: Recycling and Disposal of Hazardous Waste in Greece (<i>in Greek</i>)	Workshop 2: IWWG: Waste and Art
Afternoon	Session A3: Reinforced Materials	Session B3: Agro-Industrial Waste	Session C3: Chromium & Arsenic Contaminated Sites	Session D3: Radioactive Waste	Workshop 3: Petroleum Contaminated Sites Management: Successful Stories and Strategies
Thursday, 29 September 2016					
Morning	Keynote Speaker T. CHRISTENSEN - <i>Technical University of Denmark (DK)</i> "LCA – Life Cycle Analysis Modelling with an Industrial Waste Example"				
	Session A4: Characteristics and Treatment of Different Hazardous Waste	Session B4: Waste-To-Energy	Session C4: Contaminants Behavior	Workshop 4: Hazardous Waste Management: Experience in China	Workshop 5: Leaching Assessment Framework, Data Management and Modelling
	Session A5: Plastic Waste Contamination	Session B5: Case Studies on Environmental Impacts	Session C5: Metal Recovery from Special Waste	Session D5: End-of-Life Vehicles	
Afternoon	Keynote Speaker R. STEGMANN - <i>Hamburg University of Technology (DE)</i> "Global Pollution, What Can We Do?"				
	Session A6: Construction and Demolition Waste	Session B6: Groundwater & Surface Water Remediation	Session C6: Hospital Waste Management	Session D6: Reuse of Industrial Residues	Workshop 6: Hyperspectral Imaging and its Applications in Industrial and in Hazardous Waste Characterization and Handling
	Visit of the "WASTE-REINVENTED" Exhibition in Chania City				
Friday, 30 September 2016					
Morning	Keynote Speaker G. ANGELOPOULOS - University of Patras (GR) "Utilization of High-volume Industrial By-products"				
	Session A7: Recycling from Industrial Waste	Session B7: Treatment of Contaminated Sites	Session C7: Oil Field Issues	Session D7: Management of Mining Waste	Session E7: E-Waste Management
	Session A8: New Strategies in Special Waste Management	Session B8: Polymer Production from Waste	Session C8: Industrial Wastewater Treatment II	Session D8: Medical and Hospital Waste: Status and Challenges in Greece (<i>in Greek</i>)	Session E8: E-Waste Treatment & Recycling
Afternoon	Session A9: Toxicology	Session B9: Sewage Sludge Treatment	Workshop 7: Valorization of Red Mud for Advance Wastewater Treatment		Workshop 8: Innovative Recovery Strategies of Critical Metals from WEEE
	ROUND TABLE DISCUSSION "The Plastic Effect: How is Plastic Pollution Changing the Environment?"				
	CLOSING CEREMONY GALA DINNER				
	GALA DINNER				