10th International Symposium on Biological Monitoring in Occupational and Environmental Health (ISBM-10)
“Biomonitoring for Chemical Risk Assessment and Control”
1-4 October 2017, Naples, Italy

PROGRAMME
 Committees

Scientific and Organizing Committee (SOC)
Maurizio Manno  (University of Naples Federico II, ISBM-10 Chair)
Kate Jones  (HSE, SCOT Chair)
Alessandro Alimonti  (ISS, Rome)
Pietro Apostoli  (University of Brescia)
Giovanni Battista Bartolucci  (University of Padua)
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Roberto Lucchini  (University of Brescia, Mount Sinai New York, SCTM)
Antonio Mutti  (University of Parma)
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Paul Scheepers  (Netherlands)
Tiina Santonen  (Finland)
Claude Viau  (Canada)
Dear Colleagues,

We are delighted to welcome you to the 10th International Symposium on Biological Monitoring. As you probably know, ISBM-10 is organized by the Scientific Committee of Occupational Toxicology (SCOT) of the International Commission on Occupational Health (ICOH), in collaboration with the University of Naples Federico II and the two other scientific committees of ICOH, “Toxicology of Metals” (SCTM) and “Nanomaterial Workers’ Health” (SCNWH).

The Symposium will bring together the world’s leading scientists, experts, practitioners and students in biological monitoring to discuss and share the state-of-art on biomarkers of exposure, effect and susceptibility to occupational and environmental chemicals. ISBM-10 aims to present new research and methods on biomarkers, and to promote the use of biomonitoring data as part of a prevention strategy in workplaces and in the general environment and, therefore, it will also be of interest to professionals involved in risk assessment and control through the use and interpretation of human biomonitoring data.

As for previous symposia, traditionally held between two main ICOH congresses, ISBM-10 will be a renewed opportunity to share global state-of-art research in biomonitoring for occupational and environmental health, and for risk assessment and management. As in the SCOT tradition, the selected Proceedings of ISBM-10 will be published in “Toxicology Letters” (Elsevier).

ISBM-10 will also be an opportunity to admire the beauties of Naples and its surroundings, including Pompeii, the Amalfi Coast and the beautiful islands of the bay of Naples, Capri, Ischia and Procida.

Welcome to Naples!

Maurizio Manno  
Chair of ISBM-10

Kate Jones  
Chair of SCOT
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Venue
Congress Center of the University of Naples Federico II (Via Partenope, 36)
Social dinner on Tuesday 3 October 2017
The social dinner will take place in a restaurant overlooking the Bay of Naples. A bus transfer will depart at 20:00 from opposite the Hotel Excelsior (100 mt to the right facing the Congress venue).

The cost is € 80.00 per person and includes: bus transfer to the venue, 4 course meal, and live music.

Tickets may be purchased at the Secretariat Desk no later than Monday 2 October.

Badges
Only registered participants can access the Congress Center. Please wear your badge at all times during the congress.

Registration and information desk
The Registration and Information desk is located on the ground floor of the Congress Center and will be open at the following times:

- 2 Oct  8:30 - 18:30
- 3 Oct  8:30 - 18:30
- 4 Oct  8:30 - 14:30

On 1 October, a pre-registration desk will be open from 18:30 to 20:30 at the Hotel Royal Continental (Via Partenope, 38-44).

Coffee breaks and lunches
Coffee breaks and lunches during the meeting will be served in the catering area on the 1st floor of the Congress Center.

WI-FI
Wi-Fi is available in the Congress Center.
Information for presenters

**ORAL SESSIONS:** Speakers must deliver their presentation to the **Slide Center** at least 1 hour before the beginning of their session. If presentations have special features (e.g., videos, etc.) please advise the Slide Center at least 4 hours before the start of the session. Speakers are kindly requested to keep within the allotted time. Chairpersons have been instructed to ensure that all speakers keep to the assigned time frame.

**POSTER SESSIONS:** Presenters are requested to stand by their poster(s) during their poster session from 13.45 to 14.30. **Set up and removal times:** posters must be hung, **on the day of the session only**, preferably between 8.30-9.30, and must be removed at the end of the same day not later than 19.00. The Organizing Secretariat will not be held responsible for posters that have not been removed. Tape will be provided in the poster area.

**Abstract book**
## 2 October 2017

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<td>Oral communications Session 1 &lt;br/&gt;<strong>Population studies</strong></td>
<td>Oral communications Session 2 &lt;br/&gt;<strong>Occupational exposure biomarkers 1</strong></td>
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### 3 October 2017

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<td>Oral communications Session 5 <em>Metals</em></td>
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**Social dinner**
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<td>SCOT Celebration and closing remarks</td>
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Sunday 1 October

18.30 - 20.30 Registration opens at Hotel Royal Continental
19.00 - 21.00 Welcome Cocktail

Venues

On 1 October only
the venue will be Hotel Royal Continental (Via Partenope, 38/44, Naples).

On 2, 3 and 4 October
the venue will be the Congress Center of the University of Naples Federico II
(Via Partenope, 36, Naples).
09:30-10:00 Opening Session

10:00-10:30 Keynote lecture 1. Chair: Kate Jones (UK)
Increased precision in exposure and risk assessment by integration of biomonitoring: the cases of bisphenol A and phthalates
Wolfgang Dekant
University of Wuerzburg, Germany

10:30-11:00 Keynote lecture 2. Chair: Len Levy (UK)
Biomonitoring in the workplace: recent experience from REACH applications for authorisation
Tim Bowmer
European Chemicals Agency, Risk Assessment Committee (ECHA-RAC), Helsinki, Finland

11:00-11:30 Coffee Break

11:30-13:00 Plenary Session 1.
The role of biomonitoring in modern risk assessment
Chairs: John Cocker (UK) and Claude Viau (CA)

Improving risk assessment of chemicals by the use of human biomonitoring - HBM4EU Project Activities
*Finnish Institute of Occupational Health, Helsinki, Finland

The importance of toxicokinetics in the interpretation of human biomonitoring data
Peter J. Boogaard*, G. Bachler
*Wageningen University & Research, The Netherlands, and Shell Health, Shell International bv, The Hague, The Netherlands

Biological monitoring (BM) of workers exposed to inorganic molybdenum (Mo) compounds and its use in risk assessment
Len Levy
Cranfield University, UK

Bio-monitoring of occupational exposures to carbon disulphide: A scoping review
D. Lipsa, K. Nagy, Demosthenes Papameletiou*, N. Stilianakis, P. Vaes
*EC JRC

13:00-13:45 Lunch
13:45-14:30  Poster Session 1

**Topic 1: Effect and susceptibility biomarkers**

*Chairs: Ivo Iavicoli (IT) and Jaroslav Mráz (CZ)*

**P_02**  
Biomarkers of early genotoxicity and oxidative stress for occupational risk assessment of exposure to styrene in the fibreglass reinforced plastic industry  
INAII, Rome, Italy

**P_03**  
Evaluation of sugarcane and orange vinasses phytotoxicity by means of germination and root growth tests in lettuce seeds  
Centro Universitário Hermínio Ometto - FHO|Uniararas, Araras, São Paulo, Brazil

**P_04**  
Evaluation of the cytotoxic and genotoxic potential of the Cactinea NutraceaTM in culture of liver hepatocellular carcinoma HepG2  
*F.F. Navarro, F.D. Campos-Pereira, M.M. Roberto, C.A. Christofoletti, M.A. Marin-Morales*  
Centro Universitário Hermínio Ometto - FHO|Uniararas, Araras, São Paulo, Brazil

**P_05**  
Assessment of oxidative damage in workers exposed to low-dose benzene  
*C. Costa, M. Teodoro, G. Briguglio, S. Gangemi, S. Catania, V. Rapisarda, C. Fenga*  
University of Messina, Italy

**P_07**  
Oxidative damage and urinary mutagenicity in children living in industrial contaminated sites of Priolo (Italy)  
*C. Ledda, M. Bracci, D. Cinà, M. Pane, P. Pavone, V. Rapisarda*  
University of Catania, Italy

**P_08**  
Analysis of the toxic potential of treated vinasse using an integrated treatment system with the CWS: histopathology of Nile tilapia (*Oreochromis niloticus*)  
*A.C.C. Marcato, C.P. de Souza, C. Moreira-de-Sousa, C.S. Fontanetti*  
UNESP - São Paulo State University, Rio Claro, Brazil

**P_09**  
PON1 status and HDL subclasses as cardiovascular disease biomarkers  
Universidad Autónoma de Nayarit, Mexico

**P_10**  
DNA repair capacity and its association with the expression of DNA repair genes in newborns from a polluted urban city  
*N. Montes-Castro, I. Alvarado-Cruz, and B. Quintanilla-Vega*  
Toxicology Department, CINVESTAV, Mexico City, Mexico

**P_11**  
Effects of occupational toluene and noise exposure on hearing loss  
*Z. Vadnjal Gruden, P. Gruden, L. M. Beović*  
EOS Zora Vadnjal Gruden Occupational Medicine Clinic, Kranj, Slovenia

**P_12**  
Comparing the genotoxicity of a multiwalled carbon nanotube and crocidolite towards the evaluation of its potential impact on the workers’ health  
*C. Ventura, A. Sousa-Uva, M. João Silva*  
Instituto Nacional de Saúde Doutor Ricardo Jorge, Lisboa
**Topic 2: General issues in biomonitoring**

Chairs: Giuseppe De Palma (IT) and Craig Sams (UK)

**P_14** Human biomonitoring for Europe (HBM4EU): the role of Italy
A. Alimonti, A. Pino, B. Bocca, A.M. Ingelido, A. Abballe, A.L. Iamiceli, F. Ruggieri, E. De Felip
*Istituto Superiore di Sanità, Rome, Italy*

**P_15** Italian reference values: evolution and interpretative contribution also for the evaluation of exposures to carcinogenic/mutagenic substances
M.C. Aprea, M. Bettinelli, I. Iavicoli, P. Lovreglio, S. Negri, L. Perbellini, A. Perico, M.C. Ricossa, F. Salamon
*Azienda USL Toscana Sud Est, Siena, Italy*

**P_16** Smoking habit, biomarkers and risk perception
*Department of Clinical and Community Sciences, University of Milan and Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, Milan, Italy*

**P_17** Time-trends of the German population exposure to contaminants using the part for human samples of the German environmental specimen bank (ESB)
*University of Erlangen-Nuremberg, Erlangen, Germany*

**P_18** Human biomonitoring – The Austrian experience
H. Moshammer, H-P. Hutter
*Medical University of Vienna, Austria*

**P_19** Cytotoxics in medical care: questions from occupational professionals and caregivers about biological monitoring
J. Passeron, F. Pillière, S. Ndaw, O. Hanser, A. Guilleux
*National Research and Safety Institute for the Prevention of Occupational Accidents and Diseases (INRS), Nancy, France*

**P_20** A biobank for studies of normal variability of biomarkers
G. Sallsten, L. Barregard
*University of Gothenburg, Sweden*

**P_21** Overview of human biomonitoring initiatives under the government of Canada’s chemicals management plan (2007-2017)
A. St-Amand, C. Khoury
*Government of Canada, Ottawa, Canada*
Topic 3: Metals
Chairs: Alessandro Alimonti (IT) and Gerd Sallsten (SE)

P_22  Traditional remedies and risk of heavy metal poisoning
A. Bendjamaa, D. Boulkrinat, M.C. Chekkour, B. Alamir
University Hospital, Oran, Algeria

P_23  Estimation of occupational exposure to metals in a paint factory
S. Djelad-Kaddour, A. Younes, A. Bendjamaa, S. Chauoi, B. Rezk-kallah, H. Rezk-kallah
University Hospital, Oran, Algeria

P_24  A role of enterobacteria in arsenic intake from seaweed
A. Hata, M. Hasegawa, K. Yamanaka, Y. Endo, Y. Yamano, T. Yamauchi, N. Fujitani, G. Endo
Chiba Institute of Science, Chiba, Japan

P_25  Occupational exposure to chromium and nickel in thermal spraying workers: Preliminary biological and atmospheric assessments
Institut National de Recherche et de Sécurité (INRS), Vandoeuvre Cedex, France

P_26  Oxidative DNA damage and lipids peroxidation as effect biomarkers of mercury-exposed workers
Nofer Institute of Occupational Medicine, Lodz, Poland

P_27  Effect of personal protective equipment in workers’ metal exposures
M. Jumpponen, P. Heikkinen, H. Rönkkömäki, J. Laitinen
Finnish Institute of Occupational Health, Helsinki, Finland

P_29  Recommendation of biological values for hexavalent chromium and its compounds for the biomonitoring of chemicals at workplace
F. Lamkarkach, F. Sissoko, D. Brunet and the Scientific Expert Committee on Occupational Exposure Limits
French Agency for Food, Environmental and Occupational Health and Safety (ANSES), Maisons-Alfort, France

P_30  Chronic kidney disease of unknown origin in sugarcane industry: Metals analysis in biological samples
Health and Safety Executive, Buxton, UK

P_31  Metals biomonitoring in hair, blood and urine in the Northwest Territories, Canada
M. Ratelle, M. Bouchard, B. Laird
University of Waterloo, Ontario, Canada

P_32  Associations of blood lead levels with neuropsychological symptoms and delta-aminolevulinic acid dehydratase genotype in glass cutters
T. Ratkajec
Madicina dela Rogaska, Rogaska Slatina, Slovenia

P_33  Recommendation of biological values for beryllium and its compounds for the biomonitoring of chemicals at workplace
F. Sissoko, F. Lamkarkach, D. Brunet and the ANSES Scientific Expert Committee on Occupational Exposure Limits
French Agency for Food, Environmental and Occupational Health and Safety (ANSES), Maisons-Alfort, France

P_34  Nrf2, Keap1 promoters and DNA methylation as early effects biomarkers of inorganic arsenic exposure
Nofer Institute of Occupational Medicine, Lódz, Poland
14:30-15:00 Keynote lecture 3. Chair: Lars Barregard (SE)
Assessing exposure to metals using biomonitoring. Achievements and challenges.
Benoit Nemery de Bellevaux
Catholic University of Leuven, Belgium

15:00-16:30 Plenary Session 2. (in collaboration between SCOT and SCTM) Advances in metal biomonitoring
Chairs: Silvia Fustinoni (IT) and Natalia Pawlas (PL)

Biomarkers of metal exposure and toxicity in urine: new opportunities and new challenges
Alfred Bernard
Catholic University of Leuven, Belgium

Effects of environmental and occupational exposure to lead and other xenobiotics on telomere length
*Institute of Occupational Medicine and Environmental Health, Sosnowiec, Poland

Blood lead levels following consumption of game meat in Italy
Silvia Fustinoni*, S. Sucato, D. Consonni, P.M. Mannucci, A. Moretto
*University of Milan and Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, Milan, Italy

Urinary manganese related to exposure among manganese alloy production workers
Dag Ellingsen*, B. Berlinger, K. Dahl, Y. Thomassen
*National Institute of Occupational Health, Oslo, Norway

Biological monitoring of inorganic mercury – can the kidney burden be estimated?
Gerd Sallsten*, M. Akerstrom
*Sahlgrenska University Hospital and Academy, University of Gothenburg, Sweden

Health-based guidance values for blood lead and urinary cadmium – do they protect us?
Lars Barregard
Sahlgrenska University Hospital and Academy, University of Gothenburg, Sweden

16:30-17:00 Coffee Break
17:00-18:30  Special Session 1.
Human biomonitoring in chemical disasters and accidents
Chairs: Gunnar Johanson (SE) and Paul T.J. Scheepers (NL)

Human biological monitoring following chemical incidents – experience with a guideline in The Netherlands
Paul T.J. Scheepers*, C. Gielkens, N. Nijhuis
*Radboud Institute for Health Sciences, Radboudumc, Nijmegen, The Netherlands

Human biomonitoring (HBM) after chemical incidents – Concepts, examples and lessons learned
Michael Bader*, S. Bäcker, T. Jäger, G. Van Bortel, S. Webendörfer, C. Oberlinner, S. Lang
*BASF SE, Ludwigshafen, Germany

Human biomonitoring as a tool of objective exposure assessment: A case-study of a major train accident with acrylonitrile in Belgium
*Scientific Institute of Public Health, Brussels, Belgium

High PFAS in serum in Swedish populations exposed to fire fighting foam contaminated drinking water
Christian Lindh*, K. Jakobsson, K. Forsell, K. Scott, T. Fletcher
*Lund University, Sweden

Incident preparedness – Identification of chemicals suitable for human biomonitoring (HBM)
Gunnar Johanson
Karolinska Insitutet, Stockholm, Sweden
Biomonitoring of some common non-persistent pesticides and dietary determinants in Swedish populations
Moosa H. Faniband*, M. Littorin, C. H. Lindh
*Lund University, Sweden

Assessment of the environmental levels and predictors of exposure to some endocrine disruptors in a Belgian adult population: focus on mercury, cadmium, organochlorine pesticides and PCBs
Catherine Pirard*, S. Compere, K. Firquet, C. Charlier
*CHU of Liège, Belgium

Exposure to environmental chemicals in adolescents in Flanders: geographical and temporal variability
*Vrije Universiteit Brussel, Belgium

Biomonitoring of organophosphorus flame retardants in a Swedish population: Results from four investigations between years 2000 – 2013
*Lund University, Sweden

Contaminant and nutrient biomonitoring in the Northwest Territories, Canada:
Shedding light on the risks and benefits from food choices
M. Ratelle, M. Laird, H. Swanson, Brian Laird*
*University of Waterloo, Ontario, Canada

The Alberta Biomonitoring Program phase three: environmental chemicals in pooled maternal and cord serum samples
Amy MacDonald*, D. Kinniburgh, S. Gabos, B. Lee, P. Cheung, F. Ackah, J. Graydon, A. Lyon, J. Jarrell, G. Benade
* University of Calgary, Alberta, Canada
17:00-18:30  Oral communications Session 2.
Occupational exposure biomarkers 1
Chairs: Enrico Bergamaschi (IT) and Susana Viegas (PT)

Exhaled breath condensate: A novel matrix for biological monitoring to assess occupational exposure to respirable crystalline silica
Jackie Morton*, J. Staff, E. Leese
*Health & Safety Laboratory, Buxton, UK

Occupational exposure to BTEX in an oil refinery assessed by urine analysis: Comparison between standard work and special clean-up
*Institut National de Recherche et de Sécurité (INRS), Vandoeuvre, France

Using two different urinary biomarkers of benzo(a)pyrene to assess occupational exposure and individual cancer susceptibility
Anne Maitre*, D. Barbeau, M. Marques, R. Persoons
*Biology and Pathology Institute, Grenoble Cedex 9, France

Occupational exposure of cashiers to Bisphenol S, alternative of Bisphenol A in thermal paper
Sophie Ndaw*, A. Robert, A. Rémy
*Institut National de Recherche et de Sécurité (INRS), Vandoeuvre, France

Evaluation of the exposure to solvents in workers from a thermoplastic panels factory: Air, dermal and bio-monitoring
Matteo Creta*, H. Moldovan, S. Voidazan, L. Godderis, J. Vanoirbeek, R. Corneliu Duca
*University of Leuven, Belgium

Biomonitoring of the herbicide glyphosate in a population from Zarcero, Costa Rica
*Lund University, Sweden
09:00-09:30  Keynote lecture 4.
Chair: Ivo Iavicoli (IT)

Biological monitoring of workers exposed to engineered nanomaterials
Paul A. Schulte*, I. Iavicoli, V. Leso
*National Institute for Occupational Safety and Health, Cincinnati, OH, USA

09:30-11:00  Plenary Session 3. (in collaboration between SCOT and SCNWH)
Nanomaterials
Chairs: Ivo Iavicoli (IT) and Paul A. Schulte (US)

Risk assessment and management of engineered nanomaterials: The relevance of susceptibility biomonitoring
Ivo Iavicoli*, V. Leso, P.A. Schulte
*University of Naples Federico II, Italy

Biomonitoring of oxidative stress and inflammation in nanocomposites production workers
*Charles University, Prague, Czech Republic

The role of biological monitoring in nanotechnology hazard and risk assessment
Enrico Bergamaschi
University of Turin, Italy

First results of the nano long-term inhalation study with two nanomaterials, Ceria and Barium sulphate
L. Ma-Hock, J. Keller, S. Gröters, B. van Ravenzwaay, Robert Landsiedel*
*BASF SE, Ludwigshafen, Germany

Global and gene specific DNA methylation in workers exposed to multi walled carbon nanotubes
*Catholic University of Leuven, Belgium

11:00-11:30  Coffee Break
11:30-13:00  Special Session 2.
Novelties in the use of human biomonitoring to characterise pesticide exposure
Chairs: Kate Jones (UK) and Paul T.J. Scheepers (NL)

Human biomonitoring data collection from occupational exposure to pesticides
Kate Jones*, C. Sams, R. Bevan, T. Brown, F. Matthies, J. Hanlon, M. La Vedrine
*Health & Safety Executive, Buxton, UK

Pesticide urinary biomarker discovery in small-scale human volunteer studies using LC-full scan HRMS
Hans Mol*, R. Nijssen, A. Oerlemans, P.T.J. Scheepers
*RIKILT – Wageningen University & Research, Wageningen, The Netherlands

Biomonitoring long and short term exposure to penconazole using hair and urine specimens
Rosa Mercadante*, E. Polledri, F.M. Rubino, S. Mandic-Rajcevic, C. Colosio, A. Moretto, S. Fustinoni
*University of Milan and Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, Milan, Italy

Urine collection methods for non-toilet trained children in environmental exposure assessment of pesticides
*Radboud University Medical Center, Nijmegen, The Netherlands

Simultaneous assessment of phenolic metabolites in human urine for a specific biomonitoring of exposure to organophosphate and carbamate pesticides
Heike Denghel*, T. Göen
*Friedrich-Alexander-University Erlangen-Nürnberg, Erlangen, Germany
11:30-13:00  Oral communications Session 3.
Effect biomarkers
Chairs: Maurizio Manno (IT) and Benoit Nemery de Bellevaux (BE)

Comparison of PCB induced inhibition of telomerase gene expression bioassays and PCB concentrations in human plasma
Theresa Vasko*, T. Schettgen, T. Kraus, P. Ziegler
*RWTH Aachen University, Germany

Genotoxicity assessment of organic dust exposure – A human biomonitoring study developed in bakeries
Carina Ladeira*, C. Ramos, A. Ferreira
*Instituto Politécnico de Lisboa (ESTeSL/IPL), Portugal

Evaluation of a challenge assay as an effect biomarker in environmental or occupational biomonitoring studies
H. Louro, O. Monteiro-Gil, D. Penque, Maria João Silva*
*National Institute of Health Doutor Ricardo Jorge (INSA), Lisbon, Portugal

School-aged girls’ intellectual function is more affected by low lead exposure than boys’
*Federal University of Bahia, Brazil

Urinary biomarkers of exposure to PAHs and association with oxidative damage to nucleic acids
Giovanna Tranfo*, D. Pigini, F. Tombolini, E. Paci
*INAIL, Rome, Italy
11:30-13:00  Oral communications Session 4. 
Occupational exposure biomarkers 2
Chairs: Masayuki Ikeda (JP) and Tiina Santonen (FI)

Biomonitoring of occupational exposure to styrene: Determinants of exposure and risk management measures
J. Richard, A. Maitre, C. Herve, M. Marques, V. Bonneterre, D. Barbeau, Renaud Persoons*
*CHU Grenoble Alpes, La Tronche, France

Environmental and biological monitoring of occupational exposure to polynuclear aromatic hydrocarbons during highway paving in Italy
Giuseppe De Palma*, M. Paganelli, M. Sarnico, C. Tomasi, S. Carattini, P. Apostoli
*University of Brescia, Italy

Urinary trimethyltin reflects blood trimethyltin in workers
Gaku Ichihara*, M. Iida, T. Fujie, T. Kaji, Y. Kim
*Tokyo University of Science, Japan

Human biomonitoring of resorcinol exposure in Finland
Simo P. Porras*, M. Hartonen, K. Ylinen, T. Tuomi, T. Santonen
*Finnish Institute of Occupational Health, Helsinki, Finland

Urinary elimination of S-phenylmercapturic acid and urinary benzene 16 hours after the end of the exposure to low concentrations of benzene
*University of Bari Aldo Moro, Bari, Italy

Workplace drug testing in Australia. A snapshot and emerging issues
John Edwards
Medvet Science, Adelaide, Australia

13:00-13:45  Lunch
13:45-14:30  Poster Session 2

**Topic 4: Exposure biomarkers**
Chairs: Arnulfo Albores (MX) and Kate Jones (UK)

**P_35**  Simultaneous determination of urinary S-phenylmercapturic and trans,trans muconic acids by solidphase microextraction and gas chromatography/mass spectrometry
S. Dugheri, A. Bonari, I. Pompilio, N. Mucci, M. Montalti, M. Gentili, G. Arcangeli
Università degli Studi di Firenze, Firenze, Italy

**P_36**  Evaluation of the professional carbon monoxide exposure
N. Belabbaci, R. Tekkouk, I. H. Yermes, N. Lachgueur
University of Oran, Algeria

**P_37**  Results of a 1-vinyl-2-pyrrolidone metabolism study in Sprague-Dawley rats
J. Bertram, T. Kraus, J. Steitz, R. Tolba, T. Schettgen
RWTH Aachen University, Germany

**P_38**  A review on human biomonitoring following exposure to solid waste incinerator emissions
L. Campo, P. Bechtold, L. Borsari, S. Fustinoni
Università degli Studi di Milano and Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, Milan, Italy

**P_39**  Decline in breath ethanol after inhalation of ethanol vapors and use of mouth wash
L. Ernstgård, A. Pexaras, G. Johanson
Karolinska Institutet, Stockholm, Sweden

**P_40**  Inhalational and dermal exposure of deuterium-labelled bis (2-ethylhexyl) phthalate [DEHP] and diethyl phthalate [DEP] and subsequent biomonitoring in human urine
A. M. Krais, C. Andersen, J. H. Pagels, C.H. Lindh, A. Gudmundsson, A. Wierzbicka
Lund University, Sweden

**P_41**  Can Skellefteå model reduce firefighters’ exposure to chemical agents in operative work?
J. Laitinen, H. Lindholm, M. Aatamila, S. Hyttinen and P. Karisola
Finnish Institute of Occupational Health, Helsinki, Finland

**P_42**  Perfluorinated compounds biomonitoring in serum of Italian children
C. Ledda, G. La Torre, D. Cinà, P. Pavone, C. Pomara, V. Rapisarda
University of Catania, Italy

**P_43**  Urinary biomarkers for exposure to diesel exhaust
C. Sams, K. Jones
Health & Safety Executive, Harpur Hill, Buxton, UK

**P_44**  HBM4EU –Science and policy for a healthy future
Tiina Santonen on the behalf of HBM4EU consortium
Finnish Institute of Occupational Health, Helsinki, Finland

**P_45**  Occupational exposure to mycotoxins. A reality in Portuguese bakeries?
S. Viegas, B. Osteresch, A. Cebola de Oliveira, B. Cramer, C. Viegas
GIAS, ESTeSL, Instituto Politécnico de Lisboa, Lisbon, Portugal
**Topic 5: New methods and matrices**

Chairs: Silvia Fustinoni (IT) and Bernd Rossbach (DE)

**P_46** Monitoring the exposure of the population to metal-nanoparticles: A new analytical challenge  
B. Bocca, F. Petrucci, S. Caimi, A. Alimonti  
Istituto Superiore di Sanità, Rome, Italy

**P_47** Analysis of gene polymorphisms in urinary cells  
P. Chiarella, D. Carbonari, P. Capone, D. Cavallo, S. Iavicoli, A. Mansi, R. Sisto, G. Tranfo  
INAIL, Rome, Italy

**P_48** Saliva as a matrix for ototoxic solvents absorption  
M. Gherardi, M.P. Gatto, A. Gordiani, N. L’Episcopo  
INAIL, Rome, Italy

**P_49** Biological monitoring of bisphenol S in urine of occupationally non-exposed German adults  
T. Jäger, S. Bäcker, O. Schmid, C. Ehnes, M. Bader  
BASF SE, Ludwigshafen, Germany

**P_51** Genotoxicity assessment of mobile phone radiation in exfoliated buccal cells in human samples  
F.M. de Oliveira, A.M. Carmona, C. Ladeira  
Instituto Politécnico de Lisboa (ESTeSL/IPL), Portugal

**P_52** Development of biological reference material for proficiency test program - Urinary total arsenic and phenol  
H. Lee and M. Lee  
Occupational Safety and Health Research Institute (OSHRI), KOSHA, Republic of Korea

**P_53** Determination of N-(2-hydroxyethyl)valine in globin of ethylene oxide-exposed workers using total acid hydrolysis and HPLC/MS/MS  
National Institute of Public Health, Prague, Czech Republic

**P_54** Metabolomic findings in young obese men and controls  
Institute of Occupational Medicine and Environmental Health, Sosnowiec, Poland

**P_55** New perspectives on the properties of the protein corona from sequential elution using detergents  
M. Pink, W. Lin, D. Segets, N. Verma, W. Peukert, S. Schmitz-Spanke  
Institute and Outpatient Clinic of Occupational, Social and Environmental Medicine, Friedrich Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen, Germany

**P_56** A method to assess mercapturic acids in urine as biomarkers of exposure to electrophilic chemicals in tobacco smoke  
E. Polledri, R. Mercedante, L. Campo, S. Fustinoni  
Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, Milano, Italy

**P_57** Determination of n-heptane metabolites in urine by headspace-solid phase dynamic extraction-gas chromatography/mass spectrometry (HS-SPDE-GC/MS)  
B. Rossbach, P. Kegel, S. Letzel  
Johannes Gutenberg University, Mainz, Germany

**P_58** Use of buccal micronucleus cytome assay to evaluate genotoxic and cytotoxic effects of antineoplastic drugs in workers of different Italian hospitals  
INAIL, Rome, Italy
Tuesday 3 October

**Topic 6: Pesticides**

Chairs: Cristina Aprea (IT) and Thomas Göen (DE)

**P_59** Butyrylcholinesterase activity and lipids parameters in workers occupationally exposed to pesticides

*Butyrylcholinesterase activity and lipids parameters in workers occupationally exposed to pesticides*


*Universidad Autónoma de Nayarit (UAN), Tepic, Mexico*

**P_60** Cholinesterase activity in indigenous Mexican farmworkers exposed to pesticides

*Cholinesterase activity in indigenous Mexican farmworkers exposed to pesticides*


*Universidad Autónoma de Nayarit (UAN), Tepic, Mexico*

**P_61** Biotoxicological assessment of occupational exposure to organophosphorus pesticides among employees of a national pesticide production company by the determination of plasma cholinesterase activity

*Biotoxicological assessment of occupational exposure to organophosphorus pesticides among employees of a national pesticide production company by the determination of plasma cholinesterase activity*

B. Chefirat, H. Ouazzani, H. Rezk-kallah

*University Hospital of Oran, Algeria*

**P_62** A biomonitoring, dermal and inadvertent ingestion sampling study of small quantity pesticide users in the horticultural and amenity gardening sector

*A biomonitoring, dermal and inadvertent ingestion sampling study of small quantity pesticide users in the horticultural and amenity gardening sector*

A. Connolly, K. Jones, K.S. Galea, I. Basinas, L. Kenny, P. McGowan, M. Coggins

*National University of Ireland, Galway, Ireland*

**P_63** Evaluation of health status and risk perception by the use and handling of pesticides in urban sprayers

*Evaluation of health status and risk perception by the use and handling of pesticides in urban sprayers*


*Universidad Autónoma de Nayarit, Tepic, Jalisco, México*

**P_64** Improving exposure assessment methodologies for epidemiological studies on plant protection products

*Improving exposure assessment methodologies for epidemiological studies on plant protection products*


*Health & Safety Executive, Buxton, UK*

**P_65** Banana plantation workers: Occupational exposure to pesticides and health effects in Ecuador

*Banana plantation workers: Occupational exposure to pesticides and health effects in Ecuador*

H.P. Hutter, H. Moshammer, P. Wallner, S. Shahrakisanavi, H. Ludwig, M. Kundi

*Medical University of Vienna, Austria*

**P_66** Stress protein and histopathology evaluation of two metallic insecticides in the midgut of the millipede Rhinocricus padbergii

*Stress protein and histopathology evaluation of two metallic insecticides in the midgut of the millipede Rhinocricus padbergii*

R.B. de Souza, A.C.C. Marcato, C. Moreira-de-Sousa, Y. Ansoar-Rodríguez, M.P.M. Coelho, C.P. de Souza, O.C. Bueno, C.S. Fontanetti

*UNESP - São Paulo State University, Rio Claro, Brazil*

**P_67** Pesticide residue analysis in hair and nails

*Pesticide residue analysis in hair and nails*

R. Nijssen, M. Savova, H. Mol

*RIKILT – Wageningen University & Research, Wageningen, The Netherlands*

**P_68** Relationship between micronuclei frequency and antioxidant enzyme activities in workers occupationally exposed to pesticides

*Relationship between micronuclei frequency and antioxidant enzyme activities in workers occupationally exposed to pesticides*

M.C. Xotlanihua Gervacio, I.M. Medina Díaz, B.S. Barrón Vivanco, Y.Y. Bernal Hernández, C.A. González Arias, M. Sordo Cedeño, A.E. Rojas García

*Universidad Autónoma de Nayarit, Tepic, Mexico*
14:30-15:00  Keynote lecture 5.  
Air pollution stress and the ageing phenotype  
Tim Nawrot  
Hasselt University & Leuven University, Belgium

15:10-16:40  Oral communications Session 5.  
Metals  
Chairs: Lars Barregard (SE) and Alfred Bernard (BE)

Promoting health in small and artisanal mining of gold (PROSAMIGO) – A feasibility study for human biological monitoring of mercury exposure  
I. Ottenbros, R.Z. Boerleider, B. Jubitana, J. Quik, N. Roeleveld, Paul T.J. Scheepers*  
*Radboudumc, Nijmegen, The Netherlands

Urinary mercury excretion in Bolivian workers and families engaged in small scale gold mining  
Jean Grassman*, J. Caravanos, G. Johnson, Z. Cheng  
*CUNY Graduate School of Public Health and Health Policy, New York, USA

Biological monitoring of exposure to selenium compounds in workers of the selenium processing industry  
Thomas Göen*, J. Hildebrand, A. Greiner, H. Drexler  
*University of Erlangen-Nuremberg, Erlangen, Germany

Metal exposure and oxidative stress in Tunisian electric steel foundry workers  
Laura Campo*, M. Hanchi, S. Sucato, E. Polledri, D. Saidane Mosbah, S. Fustinoni  
*University of Milan and Fondazione IRCCS Ca’ Granda Ospedale Maggiore Policlinico, Milan, Italy

Annual trends in general population exposure to cadmium: Studies in Japan, Korea and China  
*Kyoto Industrial Health Association, Japan

Manganese and lead levels in settled dust in elementary schools are correlated with biomarkers of exposure in school-aged children  
*Federal University of Bahia, Brazil
Using biomarker data to establish a benchmark dose limit for perfluoro-octanoic acid (PFOA)

Tony Fletcher*, L. Stayner

*Public Health England & London School of Hygiene and Tropical Medicine, London, UK

Levels of speciated arsenic in urine from the Canadian health measure survey and using biomonitoring equivalents for estimating risk

Annie St-Amand*, M. Croteau, M. Guay, A. Vézina, R. Charron, K. Werry

*Health Canada, Ottawa, Canada

Italian reference values of elements in urine: the example of chromium and nickel

I. Iavicoli, M. Bettinelli, P. Lovreglio, S. Negri, L. Perbellini, A. Perico, M.C. Ricossa, F. Salamon, Maria Cristina Aprea*

*USL Toscana Sud Est, Siena, Italy

Improving risk assessment of vineyard mancozeb applicators by integrating environmental and biological monitoring results

Stefan Mandic-Rajcevic*, F.M. Rubino, E. Ariano, D. Cottica, S. Neri, C. Colosio

*University of Milan and International Centre for Rural Health of the San Paolo Hospital, Milan, Italy

Biomonitoring of leukotriene-mediated neuroinflammation for risk assessment of the toxic brain damage in methyl alcohol exposure


*Charles University, Prague, Czech Republic

In-field personal cholinesterase assessment project (PCAP). A method of measuring cholinesterase insecticide exposures amongst farmers in Western Victoria, Australia


*Flinders University, Adelaide Australia
15:10-16:40  Special Session 3.
Antineoplastic drugs in urine
Chairs: Rudolf Schierl (DE) and Cristina Sottani (IT)

Bimonitoring of antineoplastic drugs in urine: Pros and Cons
Rudolf Schierl
University of Munich (LMU), Germany

Speciation analysis of antineoplastic platinum drugs in urine
G. Koellensperger, Stephan Hann*
*University of Natural Resources and Applied Life Sciences, Vienna, Austria

Biomonitoring of platinum in urine after drug application by hyperthermic intraperitoneal chemotherapy and pressurized intraperitoneal aerosol chemotherapy
Sophie Ndaw*, O. Hanser, M. Vidal, N. Bakrin, J. Passeron, A. Guilleux, A. Robert
*Institut National de Recherche et de Sécurité (INRS), Vandoeuvre, France

A new, sensitive and versatile assay for quantitative determination of α-fluoro-β-alanine (FBAL) in human urine by using the reversed-phase ultrahigh performance-tandem mass spectrometry (RP-UPLC-MS/MS) system
Cristina Sottani*, S. Collina, D. Santorelli, E. Grignani, D. Cottica
*ICS MAUGERI SPA SB IRCCS, Pavia, Italy

Biomonitoring of antineoplastic drugs in urine of clinical staff
Michael J. Koller*, R. Schierl
*University of Munich (LMU), Germany

16:40-17:00  Coffee Break
17:00-18:30  Oral communications Session 7.
New developments in exposure biomarkers
Chairs: Alessandro Alimonti (IT) and Gaku Ichihara (JP)

Hydrolytic cleavage products of globin adducts in urine as a new type of biomarkers. Studies in rats and humans
*National Institute of Public Health, Prague, Czech Republic

Diisocyanate-lysine conjugates in urine. A specific diisocyanate metabolite?
Laura Kenny*, K. Jones
*Health & Safety Executive, Buxton, UK

Suitability of different naphthalene metabolites for their application in biomonitoring studies
Katrin Klotz*, M. Zobel, A. Schäferhenrich, H. Drexler, T. Göen
*Friedrich-Alexander University of Erlangen-Nuremberg, Erlangen, Germany

Kinetics of tri-(2-ethylhexyl) trimellitate (TOTM) and its metabolites in blood and urine after single oral dose exposure
Christine Höllerer*, E. Eckert, G. Becker, T. Göen
*Friedrich-Alexander University of Erlangen-Nuremberg, Erlangen, Germany

Urinary excretion of heptanones, heptanoles and 2,5-heptane-dione after controlled acute exposure of volunteers to n-heptane
Bernd Rossbach*, P. Kegel, S. Letzel
*Johannes Gutenberg University, Mainz, Germany

Exposure to mycotoxins in Cork industry – The importance of a multibiomarker approach
*GIAS, ESTeSL-Escola Superior de Tecnologia da Saúde de Lisboa, Instituto Politécnico de Lisboa, Lisbon, Portugal
17:00-18:30  Oral communications Session 8.
Genetics, epigenetics and omics
Chairs: Betzabet Quintanilla-Vega (MX) and Sahoko Ichihara (JP)

Biological monitoring of low level exposure to benzene in a refinery: Effect of modulating factors
*University of Padua, Italy

Pesticides and health in agriculture. Genetic damage and susceptibility
C. Costa, J. García-Lestón, S. Costa, V. Valdiglesias, S. Bonassi, B. Laffon, J. Snawder, João P. Teixeira*
* Portuguese National Institute of Health, Porto, Portugal

Associations between apolipoprotein E genotypes and Hg concentrations in cord blood
*Josef Stefan Institute, Ljubljana, Slovenia

Identification of smoking-induced changes in DNA methylation in an epigenome-wide scan
Sahoko Ichihara*, M. Nakatochi, T. Matsubara, G. Ichihara, M. Yokota, K. Yamamoto
*Jichi Medical University, Shimotsuke, Japan

NMR-based metabolomics of exhaled breath condensate from subjects after low-level occupational exposure to chemical mixtures
*ICS Maugeri SPA IRCCS, Telese Terme, Italy

Discrimination of carbon black particles – loaded with different concentrations of diesel engine exhaust – using untargeted metabolomics combined with cellular assays
M. Pink, N. Martner, N. Verma, Simone Schmitz-Spanke*
* Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen, Germany
17:00-18:30  Special Session 4.
Alternative matrices
Chairs: Jackie Morton (UK) and Giovanna Tranfo (IT)

Determination of phthalate metabolites in amniotic and cerebrospinal fluids
Giovanna Tranfo*, E. Paci
*INAIL, Rome, Italy

Chromium speciation in exhaled breath condensate: Improved risk characterization?
E. Leese, Jackie Morton*, P.H.E. Gardiner, V. A. Carolan
*Health and Safety Executive, Buxton, UK

Determination of mercury in hair of children
F. Petrucci, O. Senofonte, C. Forte, C. Majorani, Anna Pino*, B. Bocca, A. Alimonti
*Istituto Superiore di Sanità, Rome, Italy

Hair analysis for biomonitoring of human exposure to organic pollutants
Radu Corneliu Duca
Catholic University of Leuven, Belgium

Alternative strategies for the analysis of nanoparticle corona
Mario Pink*, N. Verma, W. Lin, D. Segets, S. Schmitz-Spanke
*Institute and Outpatient Clinic of Occupational, Social and Environmental Medicine, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen, Germany
09:00-11:00  SCOT-SCOEL Joint Session.
Biological limit values and biological guideline values: an international overview
Chairs: Kate Jones (UK) and Len Levy (UK)

The biological exposure indices (BEIs®) of ACGIH® - Concept, framework and practical application
Michael Bader
BASF SE, Ludwigshafen, Germany

The SCOEL approach to biological limit values and biological guidance values
Gunnar Johanson
Karolinska Insitutet, Stockholm, Sweden

The German approach for the recommendation of biological limit and guideline values
Hans Drexler
Friedrich-Alexander University of Erlangen- Nuremburg, Erlangen, Germany

Derivation of occupational biological limit values and biological reference values at the French Agency for Food, Environmental and Occupational Health & Safety
Claude Viau
University of Montreal, Canada

Biological monitoring without limits
John Cocker*, K. Jones
*Health and Safety Executive, Buxton, UK

11:00-11:30 Coffee Break

11:30-12:00  Keynote lecture 6.  Chair: Antonio Mutti (IT)
What can metabolic profiling and the exposome tell us about chemical risks?
Elaine Holmes
Imperial College, London, UK

12:00-12:30 Keynote lecture 7.  Chair: Maurizio Manno (IT)
Ethics and biomonitoring: what are the ingredients for a successful combination?
Karel Van Damme
University of Leuven, Belgium

12:30-12:45 SCOT Celebration.  Hosts: Sergio Iavicoli (IT) and Kate Jones (UK)
12:45-13:00 Closing remarks
Under the auspices of

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