



# 10<sup>th</sup> 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

## PRELIMINARY PROGRAMME



[www.centercongressi.com/isbm10](http://www.centercongressi.com/isbm10)



**18.00 - 20.30**      **Registration opens at Hotel Royal Continental**

**20.00**              **Welcome Cocktail**

*The dress code: smart/casual*

On 1 October only the venue will be Hotel Royal Continental (Via Partenope, 38/44, 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)***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***Tiina Santonen\**, P. Alvito, J. Bessems, T. Borges, D. Brunet, J. Buekers, C. Cornelis, J. van Engelen, M.C. Gonzalez Caballero, T. Humar-Juric, M. Heinälä, A. Klaus, L. Kononenko, L. Krul, F. Lamkarkach, H. Louro, A. Pronk, J-N. Ormsby, C. Rousselle, B. Schaddelee-Scholten, M.J. Silva, R. Stierum, S. Viegas, A.M. Vinggaard, T. Vermeire, M. Woutersen*\*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***Biological monitoring of workers exposed to inorganic molybdenum compounds and its use in risk assessment***Len Levy**Cranfield University, U.K.***Bio-monitoring of occupational exposures to carbon disulphide: A scoping review***Demosthenes Papameletiou**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\_01** Health status of workers exposed to pollution stress  
*S. Boubsil, C. Abdennour and M. Tegurin*  
*University Badji Mokhtar-Annaba, Algeria*
- P\_02** Biomarkers of early genotoxicity and oxidative stress for occupational risk assessment of exposure to styrene in the fibreglass reinforced plastic industry  
*D. Cavallo, G. Tranfo, C.L. Ursini, A.M. Fresegna, A. Ciervo, R. Maiello, E. Paci, D. Pignini, M. Gherardi, M.P. Gatto, S. Iavicoli*  
*INAIL, Rome, Italy*
- P\_03** Evaluation of sugarcane and orange vinasses phytotoxicity by means of germination and root growth tests in lettuce seeds  
*C.P. de Souza, C.F.H. Garcia, M.C.F. Santos, R.B. de Souza, C.S. Fontanetti, D.F. de Angelis, D. A. N.O. Leite, C.A. Christofolletti*  
*Centro Universitário Hermínio Ometto - FHO|Uniararas, Araras, São Paulo, Brazil*
- P\_04** Evaluation of the cytotoxic and genotoxic potential of the Cactinea Nutracea™ in culture of liver hepatocellular carcinoma HepG2  
*F.F. Navarro, F.D. Campos-Pereira, M.M. Roberto, C. A. Christofolletti, 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 Catania, Italy*
- P\_06** Study of health status in class four workers in a charitable rural hospital in India  
*S. Goyal, A. Jawarkar, S. Goyal*  
*Sri Ramachandra University, Chennai, India*
- 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. 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  
*I.M. Medina Díaz, F.E. Murillo-González, N. Ponce-Ruiz, J. Ponce-Gallegos, A.E. Rojas-García, Y.Y. Bernal-Hernández, B.S. Barrón-Vivanco, C.A. González-Árias, M. Torres-Tamayo, G. Cardoso-Saldaña, E. Jorge-Galarza, F. López Flores*  
*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*  
*Instituto Politécnico Nacional, Ciudad de México, Mexico*
- P\_11** Effects of occupational toluene and noise exposure on hearing loss  
*Z. Vadnjaj Gruden, P. Gruden, L. M. Beović*  
*EOS Zora Vadnjaj 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*
- P\_13** Autophagy in the cerebellar Purkinje cell induced by exposure to acrylamide  
*M. Yamamura, K. Morita, T. Matsuzoe, L. Zhang, K. Morita, C. Zhong, D. Nagashima, T. Sakurai, S. Ichihara, G. Ichihara*  
*Tokyo University of Science, Japan*

**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  
L. Campo, E. Polledri, R. Mercadante, C. Colombo, S. Sucato, P. Missineo, L. Boniardi, L. Olgiati, S. Fustinoni  
*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)  
T. Göen, D. Lermen, M. Rüther, A. Conrad, J. Hildebrand, M. Bartel-Steinbach, T. Weber, M. Kolossa-Gehring  
*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. Houry  
*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. Chaoui, B. Rezk-kallah, H. Rrezk-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  
*N. Jacoby, G. Antoine, P. Biette, F. Jeandel, A-M. Lambert-Xolin, M. Melczer, A. Remy, V. Matera, JP Elcabache, D. Rousset, A. Robert*  
*Institut National de Recherche et de Sécurité (INRS), Vandœuvre Cedex, France*
- P\_26** Oxidative DNA damage and lipids peroxidation as effect biomarkers of mercury-exposed workers  
*R. Kuras, B. Janasik, M. Stanislawska, K. Mikolajewska, J. Gromadzinska, W. Wasowicz*  
*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\_28** Biological monitoring of zinc from urine samples with SFODME technique  
*S. Karimi Zeverdegani, M. Rismanchian, M. Shabab, H.A. Rangkooy*  
*Isfahan University of Medical Sciences, Isfahan, Iran*
- 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  
*E.-T. Smpokou, B. Caplin, J. Norman, J. Le Blond, J. Morton*  
*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*  
*Medicina 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  
*B. Janasik, E. Reszka, M. Stanislawska, E. Jablonska, R. Kuras, E. Wieczorek, B. Malachowska, W. Fendler, W. Wasowicz*  
*Nofer Institute of Occupational Medicine, Lodz, 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.****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***Natalia Pawlas\**, *A. Kozłowska*, *A. Kasperczyk*, *M. Dobrakowski*, *S. Kasperczyk**\*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 Scheepers (NL)

**Human biological monitoring following chemical incidents – experience with a guideline in The Netherlands***Paul Scheepers\**, C. Gielkens, N. Nijhuis*\*Radboud Institute for Health Sciences, Radboudumc, Nijmegen, The Netherlands***Human biomonitoring 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***An Van Nieuwenhuysse\**, T. De Smedt, K. Simons, C. Stove, P. De Paepe, B. Nemery, M. Bader, C. Vleminckx, I. Van Overmeire, S. Fierens, B. Mertens, K. De Cremer, T. Goën, T. Schettgen, H. Van Oyen, J. Van Loco*\*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 Institutet, Stockholm, Sweden*



**17:00-18:30 Oral communications session 1.****Population studies**

Chairs: Michèle Bouchard (CA) and Thomas Göen (DE)

**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**

W. Baeyens, E. Govarts, L. Bruckers, E. Den Hond, V. Nelen, S. Dehenauf, I. Sioen, T. Nawrot, M. Plusquin, A. Vriens, A. Covaci, I. Loots, B. Morrens, D. Coertjens, N. Van Larebeke, Sam De Craemer\*, K. Croes, N. Lambrechts, A. Colles, G. Schoeters

\*Vrije Universiteit Brussel, Belgium

**Biomonitoring of some common non-persistent pesticides and dietary determinants in Swedish populations**

Moosa H. Faniband\*, M. Littorin, C. H. Lindh

\*Lund University, Sweden

**Biomonitoring of organophosphorus flame retardants in a Swedish population – Results from four investigations between years 2000 – 2013**

Erika Norén\*, C.H.Lindh, M. Littorin, M. Maxe, B.A.G. Jönsson, E. Larsson

\*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**

*Amandine Erb\**, P. Marsan, M. Burgart, A. Remy, F. Jeandel, A-M. Lambert-Xolin, R. Gaudin, P. Biette, O. Hanser, A. Robert

*\*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**

*Moosa H. Faniband\**, M. Littorin, A.M. Mora, M. Winkler, S. Fuhrmann, C.H. Lindh

*\*Lund University, Sweden*

**09:00-09:30 Keynote lecture 4.**

Chair: Ivo Iavicoli (IT)

**Biological monitoring of workers exposed to engineered nanomaterials***Paul Schulte\**, I. Iavicoli, V. Leso*\*National Institute for Occupational Safety and Health, Cincinnati, OH, USA***09:30:11:00 Plenary session 3.****Nanomaterials**

Chairs: Ivo Iavicoli (IT) and Paul Schulte (US)

**Risk assessment and management of engineered nanomaterials: The relevance of susceptibility biomonitoring***Ivo Iavicoli\**, V. Leso, P. Schulte*\*University of Naples Federico II, Italy***Biomonitoring of oxidative stress and inflammation in nanocomposites production workers***Daniela Pelclova\**, V. Zdimal, S. Dvorackova, M. Komarc, S. Vlckova, Z. Fenclova, J. Schwarz, J. Ondracek, O. Makes, P. Kacer, S. Zakharov*\*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***Manosij Ghosh\**, D. Öner, K. Poels, A.M. Tabish, J. Vlaanderen, A. Pronk, E. Kuijpers, R. Vermeulen, B. Bekaer, P. Hoet, L. Godderis*\*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 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. 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***Arnè Oerlemans\**, R.C.H. Vermeulen, C.J.A. Roeleveld, F.G.M. Russel, P.T.J. Scheepers*\*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

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

Hans Peter Hutter\*, H. Moshammer, P. Wallner, S. Shahrakisanavi, H. Ludwig, M. Kundi

\*Medical University of Vienna, Austria

**Genotoxicity assessment of particulate matter occupational exposure in bakeries – A human biomonitoring case study**

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'**

José Antonio Menezes-Filho\*, F.C. Carvalho, J.L. Rodrigues, N.R. dos Santos, C.S. Lima, M.J. Bandeira, L. Campos, S.C. dos Santos, R.S. Bonfim, A.L.S. Anjos, H.A.F. Bah, C.F.S. Araújo, D. Mergler

\*Federal University of Bahia, Brazil

**Urinary biomarkers of exposure to PAHs and association with oxidative damage to nucleic acids**

Giovanna Tranfo\*, D. Pignini, 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. Garattini, 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***Piero Lovreglio\*, G. De Palma, A. Barbieri, R. Andreoli, I. Drago, L. Greco, E. Gallo, L. Diomede, P. Scaramuzzo, J. Fostinelli, P. Apostoli, L. Soleo**\*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 solid-phase 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. Kraus, C. Andersen, J. H. Pagels, C. 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** Development of a fluorescent immunosensor for the benzene biomarker S-PMA in human urine  
*K. Koopal, S. van Veen, A. Pronk, T. Meijster, J. Urbanus, P. Aston*  
*TNO, The Hague, The Netherlands*
- P\_44a** Urinary biomarkers for exposure to diesel exhaust  
*C. Sams, K. Jones*  
*Health & Safety Executive, Harpur Hill, Buxton, UK*
- P\_44b** HBM4EU –Science and policy for a healthy future  
*Tiina Santonen on the behalf of HBM4EU consortium*  
*Finnish Institute of Occupational Health*
- P\_45** Occupational exposure to mycotoxins. A reality in Portuguese bakeries?  
*S. Viegas, B. Osteresch, A. Cebola de Oliveira, B. Cramer, C. Viegas*  
*Surrey University, 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. Caini, 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\_50** Investigation of methyl ethyl ketone from urine samples extracted with carbon nanotube sorbents  
*S. Karimi Zeverdegani, A.R. Bahrami, M. Rismanchian, F. Ghorbani Shahna*  
*Isfahan University of Medical Sciences, Isfahan, Iran*
- 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, Ulsan, South Korea*
- P\_53** Determination of N-(2-hydroxyethyl)valine in globin of ethylene oxide-exposed workers using total acid hydrolysis and HPLC/MS/MS  
*J. Mráz, I. Hanzlíková, Š. Dušková, L. Dabrowská, H. Chrástecká, M. Tvrđíková, R. Vajtrová, I. Linhart*  
*National Institute of Public Health, Prague, Czech Republic*
- P\_54** Metabolomic findings in young obese men and controls  
*K. Osadnik, T. Osadnik, N. Pawlas, M. Gawlita, R. Reguła, K. Bujak, M. Fronczek, M. Lejawa, J. Jaworska, J. Strzelczyk, M. Gąsior, J. Kasperczyk*  
*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*  
*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. Mercadante, 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  
*C.L. Ursini, D. Cavallo, E. Omodeo Salè, A.M. Fresegna, A. Ciervo, C. Jemos, R. Maiello, G. Buresti, C. Colosio, F.M. Rubino, P. Delrio, P. Maiolino, P. Marchetti, R. Boccia, S. Iavicoli*  
*INAIL, Rome, Italy*



## Topic 6: Pesticides

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

- P\_59** Butyrylcholinesterase activity and lipids parameters in workers occupationally exposed to pesticides  
*B. S. Barrón-Vivanco, I.B. Molina-Pintor, Y.Y. Bernal-Hernández, A.E. Rojas-García, I.M. Medina-Díaz, C.A. González-Arias*  
*Universidad Autónoma de Nayarit (UAN), Tepic, Mexico*
- P\_60** Cholinesterase activity in indigenous Mexican farmworkers exposed to pesticides  
*D.M. Paredes-Céspedes, G. López-Martínez, N. Gómez-Plata, B. Rojas-Cárdenas, A.E. Rojas-García, I.M. Medina-Díaz, B.S. Barrón-Vivanco, C.A. González-Arias, J.F. López Flores, Y.Y. Bernal-Hernández*  
*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  
*B. Chefírat, 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. 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  
*J.F. Herrera Moreno, I.M. Medina Díaz, Y.Y. Bernal Hernández, B.S. Barrón-Vivanco, C.A. González Arias, J.F. López Flores, A.E. Rojas García*  
*Universidad Autónoma de Nayarit, Tepic, México*
- P\_64** Improving exposure assessment methodologies for epidemiological studies on plant protection products  
*K. Galea, I. Basinas, J. Cherrie, R. Vermeulen, H. Kromhout, K. Jones, A.-H. Harding, C. Sams, M. van Tongeren, A. Povey*  
*Health & Safety Executive, Buxton, UK*
- P\_65** Application of molecularly imprinted polymers to modify the response of electrochemical sensors for determination of pesticides in environmental and biological samples  
*M. Khadem, F. Faridbod, S.J. Shahtaheri, A.R. Foroushani*  
*Tehran University of Medical Sciences, Iran*
- P\_66** Stress protein and histopathology evaluation of two metallic insecticides in the midgut of the millipede *Rhinocricus padbergi*  
*R.B. Souza, A.C.C. Marcato, C. Moreira-de-Sousa, Y. Ansoar-Rodríguez, M.P.M. Coelho, C.P. Souza, O.C. Bueno, C.S. Fontanetti*  
*UNESP - São Paulo State University, Rio Claro, Brazil*
- P\_67** 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  
*M.C. Xotlaníhua 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.**

Chair: Gunnar Johanson (SE)

**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 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 Mosbahi, 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***Masayuki Ikeda\*, T. Watanabe, H. Nakatsuka, S. Shimbo, C.-S. Moon, H.-R. Yang, P. Wang, Z. Zhang**\*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***J. L. G. Rodrigues, M. J. Bandeira, C. F. S. Araújo, N. R. dos Santos, A. L. S. Anjos, N. Koin, L. C. Pereira, S. S. P. Oliveira, D. Mergler, José Antonio Menexes-Filho\***\*Federal University of Bahia, Brazil*

**15:10-16:40 Oral communications session 6.****Biomonitoring in risk assessment**

Chairs: Giuseppe De Palma (IT) and Peter J. Boogaard (NL)

**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**

*Sergej Zacharov\**, K. Kotikova, O. Nurieva, P. Kacer, P. Urban, M. Vaneckova, Z. Seidl, P. Diblik, P. Kuthan, T. Navratil, D. Pelclova

*\*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**

*John Edwards\**, J. Cotton, T. Phillips, S. Brumby

*\*Flinders University, Adelaide Australia*

**15:10-16:40 Special session 3.****Antineoplastic drugs in urine**

Chairs: Rudolf Schierl (DE) and Cristina Sottani (IT)

**Biomonitoring 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  $\alpha$ -fluoro- $\beta$ -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**

Jaroslav Mráz\*, I. Linhart, I. Hanzlíková, Š. Dušková, L. Dabrowská, H. Chrástecká, M. Tvrdíková, R. Vajtrová

*\*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-Nuremburg, 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-Nuremburg, Erlangen, Germany*

**Urinary excretion of heptanones, heptanols 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**

Susana Viegas\*, B. Osteresch, Y. Hövelmann, A. Cebola de Oliveira, B. Cramer, C. Viegas, H. U. Humpf

*\*Instituto Politécnico de Lisboa, 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***Mariella Carrieri\**, G. Spatari, D. Doria, M.E. Fracasso, G. Tranfo, G.B. Bartolucci, M.L. Scapellato, M. Manno*\*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, Joao P. Teixeira\***\*Portuguese National Institute of Health, Porto, Portugal***Associations between apolipoprotein E genotypes and Hg concentrations in cord blood***Ajda Trdin\**, I. Falnoga, J. Snoj Tratnik, A. Stajniko, D. Mazej, J. Marc, M. Krsnik, J. Osredkar, I. Prpić, O. Petrović, Z. Špirić, M. Horvat*\*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***Mauro Maniscalco\**, I. Iavicoli, M. Manno, D. Paris, D. Melck, N. Chiariello, F. Di Napoli, A. Motta*\*ICS Maugeri SPA IRCCS, Telese, 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, 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, G. Forte, C. Majorani, A. Pino, B. Bocca, Alessandro 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

\*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 (BELs®) 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 Institutet, Stockholm, Sweden***The German approach for the recommendation of biological limit and guideline values***Hans Drexel**Friedrich-Alexander University, 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****12:45-13:00 Closing remarks**