

# DAY 1

Keynote Forum



4<sup>th</sup> Edition of International Conference on  
**Occupational Health and Safety**

May 28-29, 2018 | London, UK

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## OCCUPATIONAL CANCER PREVENTION SYSTEM AMONG OIL-REFINERY WORKERS BY GENO-AND IMMUNOTOXICOLOGICAL BIOMARKERS

**Anna Tompa**

Semmelweis University, Hungary

**A**ltogether more than 5000 cases were investigated since 1989 by follow-up genotoxicology monitoring investigations, performed among workers occupationally exposed to various carcinogens (e.g. in oil-industry with occupational exposure to benzene, polycyclic aromatic hydrocarbons (PAHs), bitumen, styrene and 1-3 butadiene, heavy metals etc). More than 200 workers were followed in oil refinery plants and compared to industrial controls, by geno- and immunotoxic biomarkers. In our follow-up genotoxicological study the exposed groups were monitored annually by testing chromosomal aberrations, sister-chromatid exchanges, DNA-repair capacity measurement and immune phenotyping of peripheral blood lymphocytes. Our results showed the effectiveness of active prevention together with the lowering of exposure by proper chemical safety interventions and by changes in life style (diet, smoking, alcohol consumption). However, besides exposures, the results were negatively affected by medication, obesity, non-alcoholic fatty liver and smoking. The detection of early signs of genotoxic effects of occupational and environmental carcinogens causing

DNA-damages, mutations and chromosome aberrations, are indicators of the increase risk for the development of cancer. A possible attempt for prevention is the elimination of the harmful agents from the (working) environment (primary prevention), or promoting the elimination of somatic mutations (chemoprevention), by changes in life style with cooperation with local occupational health care authorities. The incidences of malignant diseases were less among the monitored oil refinery workers, compared to age matched controls followed by the same methodology.

### Biography

Anna Tompa completed her Graduation from Semmelweis University Faculty of Medicine as a Medical Doctor, with the specialties including Pathology, Social and Community Medicine. Presently, she is Professor emeritus and Vice director of Semmelweis University, Institute of Public Health, Budapest, Hungary.

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## PHYSIOLOGICAL AND PSYCHOSOCIAL STRESS - BIOMARKERS OF STRESS

### Frédéric Dutheil

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In occupational medicine, psychosocial risks is a main concern. An occupational physician needs tools for an objective evaluation of psychosocial stress. Those tools could be questionnaires such as visual analogue scale of stress or job-demand-control questionnaire of Karasek, which can be useful to detect the most at-risk workers. Those tools to evaluate stress could also be biomarkers of stress. For example, we were the first team to propose saliva DHEAS as a reliable biomarker of stress. Then, stress can also be physiological. Main physiological stress are a mental stress, a physical stress (exercise), insufficient nutritional intake, or a sleep deprivation. Emergency physicians are a model of stress because they combine all types of stress. They are in a particular psychosocial context and they are confronted to death, they have sometimes to run, they cannot eat when they want and sometimes do not eat during 24 hours, they also cannot sleep. We will present main articles published from the Job stress study which compared several putative biomarkers of stress through different types of night shifts, through a shift-randomized controlled design. Main biomarkers of stress are heart rate and heart rate variability, as well as pro-inflammatory cytokines. We demonstrated several incidences of maximal HR during shifts combined with a high cardiac strain, as well as a

poor heart rate variability and a systematic inflammation. The 24-hour consecutive shifts exhibited the highest changes in biomarkers of stress. We also highlighted a prolonged response to the night shifts with the highest response three days after the shifts. The main explaining factor of the increase of biomarkers of stress was life-and-death emergencies. Therefore, we suggest that emergency physicians limit their exposure to 24-hour shifts and be cautious on the third day after the shift.

#### Biography

Frédéric Dutheil is a Professor in Medicine; Medical Doctor in Occupational Health; Physiologist and Researcher at University Hospital of Clermont-Ferrand (CHU) and; a Clinical Fellow of Australian Catholic University. He is member of Laboratory of Metabolic Adaptations to exercise in clinical and pathological conditions (AME2P-EA 3533) from 2006 to 2015, his work on biomarkers of stress led him to the creation and the Head of Physiological and Psychosocial Stress team at UMR CNRS 6024. He is the Scientist of Wittyfit, a software designed to improve health of workers, through a personalized and individualized feedback of their health, taking into account job characteristics. He is now aiming at building tools for objective measures of stress.

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## THE NEW DEAL IN OCCUPATIONAL HEALTH: OMS-OIT POLICIES

### Rosa Maria Orriols

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**T**he 70th session of general assembly has opened with a towering achievement: the adoption of the 2030 Agenda, including 17 inspiring sustainable development goals, the SDGs. The International Commission on Occupational Health (ICOH) is an international non-profit making, non-political, multidisciplinary scientific organisation whose sole purpose is to foster the scientific progress, knowledge and development of occupational health and related subjects on an international basis. Focus in tips to evidence the occupational risk factor-outcome pairs prioritized for a systematic review pair: occupational ergonomics factors (musculoskeletal disorders), occupational exposure to dusts and fibres (pneumoconiosis), occupational exposure to UV radiation (cataracts and melanoma and non-melanoma cancer), occupational noise (deaths from cardiovascular disease), occupational violence and, psychosocial risk factors (ischemic heart disease, stroke, depression).

#### Biography

Rosa Maria Orriols completed her Master's degree in Environmental Management Engineering; Graduate of Science in Chemical Engineering from



Barcelona University; Post-degree in Occupational Health Safety from Suffolk University and; PhD from Universitat Politècnica de Catalunya (UPC). Currently, she is Director of Occupational Hygienist Health Safety in Hospital Bellvitge (ICS) the main health institution in Spain. Her research and work focus on preventing harmful exposures and creating healthy environments at work. She was Technical Officer Occupational Health & Safety in National Occupational Safety and Health (INSHT) at Spanish Government. She is Auditor. Her research interests include: occupational & environmental exposure assessment for studies of human health risks; intervention research to prevent illness and injury and promote healthy environments in healthcare; methods to integrate occupational & environmental health and safety into production and consumption of goods and services. She has spoken, written and testified extensively on health issues, including indoor air quality (specially surgical hume), prevention of blood borne exposures, radiations exposures, as well as about the effects of work organization. Her research interest includes "Policies, organization and management, hazardous drugs, cancer, dermatitis, gloves, hospitals, blood borne exposures, radiation exposures, nanomaterials, nanomedicines and occupational health".

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# DAY 2

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## A MULTI-DISCIPLINARY EDUCATIONAL WORKSHOP AS A SINGULAR INTERVENTION FOR THE MANAGEMENT OF CHRONIC SPINAL PAIN IN HOSPITAL WORKERS: A PILOT STUDY

### Faye Shorthouse

Guys and St Thomas's NHS Foundation Trust, UK

**G**uys and St Thomas's NHS Foundation Trust provides specialist occupational health physiotherapy through self-referral to a population of 15,000 staff. The service is evolving from a 1:1 traditional care model to a stratified management pathway of various interventions to optimally meet the variable needs of the population. Work-related back pain remains a significant proportion of referrals received within the service and a predominant cause for sickness and absenteeism. The aim of this pilot is to investigate the efficiency of a novel and bespoke one-off workshop for staff that have self-referred with chronic low back pain; taking the evidence-based approach of a multi-disciplinary educational workshop to deliver all pertinent information and provide an exercise component to allow staff to feel empowered to self-manage their condition. We have analysed both self-perceived health scores and occupational health absence, and categorised staff based on their start back scores. We have found that self-perceived health outcomes correlate with the risk scoring on the start back questionnaire; and sickness absence and health outcomes improve during the

three month period, showing this to be an effective intervention for managing occupational back pain. Back pain is the largest musculoskeletal referral complaint and has a great impact on economy and efficiency of any workforce. Significance should also be placed on the impact this has to the individual, with regards to their health and wellbeing. Therefore, managing back pain within any workforce in the most effective way should be a priority for any organisation.

#### Biography

Faye Shorthouse completed her Honors degree in Physiotherapy from University of Hertfordshire in 2005. She has worked in three large teaching hospitals. She has specialisation in Musculoskeletal Physiotherapy at Imperial College Healthcare NHS Trust and completed her MSc in Musculoskeletal Physiotherapy. In 2015, she became a Specialist Physiotherapist in Occupational Health Service at Guys and St Thomas's NHS Foundation Trust. Presently, she works clinically within musculoskeletal physiotherapy and is Deputy Lead for the musculoskeletal physiotherapy team.

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## EFFECT OF MACHINING & LUBRICATING CONDITIONS ON DUST EMISSION DURING GRANITE POLISHING

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Product, Processes and Systems Engineering Laboratory (P2SEL), Canada



École de Technologie Supérieure (ÉTS), University of Quebec, Montréal (QC), H3C-1K3, Canada. Machining is necessary to shape parts but it is also an important source of pollution (such as dust and aerosols) and this constitutes hazards for machine-tools operators. The emission of dust and the overall shop floor air quality are of great concern when shaping dusty materials such as granite as this process generates harmful dusts containing silica. In recent times, the occupational health and safety regulations have become more severe. To quickly comply with new regulations, engineers and researchers must help industries in developing strategies to limit workers risk of exposure to the silica. This keynote conference will present key results on fine particles (FP) and ultrafine particles (UFP) emissions when polishing granite as a function of machining conditions: polishing parameters, tool paths, polishing strategies, lubrication and its applications modes. The main goal is to determine machining conditions leading to less dust emission while maintaining acceptable part quality and productivity. Solutions for dust removal from the polishing zone are also explored.

### Biography

Victor Songmene received his PhD from École Polytechnique de Montréal, Canada, in 2001. He has been with the Industrial Research and Development Institute (IRDI), Toronto, Canada, from 1995–2001. During its services to IRDI, he helped a large number of north american manufacturing industries, including General Motors, Wescasts, Sorel Forge, in R&D works. He is currently a full professor at University of Quebec, École de Technologie Supérieure (ÉTS), Montréal, Canada. Since joining ÉTS in 2001, he has put his expertise on developing sustainable and safe machining practices for industry. His expertise include metal cutting, fine and nanoparticle control, optimisation and environmentally conscious manufacturing. Prof. Songmene is Director of the Product, Processes and Systems Engineering Laboratory (P2SEL). He has published more than 100 papers in reputed journals and has produced more than 50 technical reports for North American industries.

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