



# COETox

International Conference of Environmental and Occupational Health

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## ABSTRACT BOOK

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**iBAMTOX**  
Ibero-American Meeting on Toxicology and Environmental Health

**2016**

**21-23 June | Porto**



## FOREWARD



On behalf of the Organising Committee, I would like to cordially welcome you to the *3rd International Conference on Occupational & Environmental Toxicology (ICOETox 2016)*, which is held in Porto in conjunction with the *3rd Ibero-American Meeting on Toxicology and Environmental Health International (IBAMTOX 2016)*.

This conference is co-organised by the Portuguese National Institute of Health (INSA), the Institute of Public Health- Universidade do Porto (ISPUP) and the Instituto de Ciências, Tecnologias e Agroambiente da Universidade do Porto (ICETA-UP).

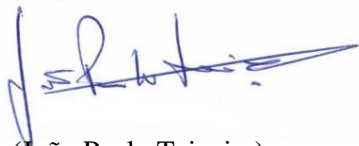
The Organising Committee was successful in inviting a number of outstanding international and local speakers in order to offer you a very attractive scientific programme. The Conference covers most of the current topics of Environmental and Occupational Toxicology; we have tried to achieve a good balance between research and practice and to allow sufficient time for interaction and discussion. This meeting provides a good opportunity for divulging one's work and discussing a great variety of topics that we hope will be reflected in a fruitful interchange of experiences, knowledge and ideas. It is also a chance for renewing old contacts and making many new friends.

The city of Porto, known as *Invicta* (unvanquished) City, has an important historical legacy, although architectural images show its urban renovation process giving valuable testimony of its history and modernity. Indeed, Porto historical centre was designated World Cultural Heritage in 1996 due to the many historical buildings and urban mesh. Porto is divided between the river Douro and the Atlantic Ocean, and boasts of poetic sunsets where the eyes absorb and the soul savours. Downtown is located the busiest commercial area, where typical products are found alongside prestigious designer brands. It is also worth highlighting the world famous Porto Wine, produced exclusively in the Douro Demarcated Region and aged in cellars. And finally, our visitors should not forget to try our local cuisine, as Porto has gone beyond tradition in order to reach the best international standards.

I would like to express my sincere thanks to our collaborating institutions and all those organisations and companies which put their trust in this project and provided sponsorship for the meeting; without their effort, support and collaboration this Conference would not have been possible.

I hope that, despite the tight scientific programme, you will find some time to enjoy our landscapes, typical food, and kind people, and that this meeting will meet all your expectations from the scientific and social points of view. I wish you a productive Conference and a pleasant stay in Porto. Thank you for being here.

Bem-vindos ao Porto!



(João Paulo Teixeira)

ICOETox 2016 | IBAMTOX 2016 Scientific Committee

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**P13.****MUTAGENICITY/GENOTOXICITY OF PM<sub>0.5</sub> COLLECTED DURING WINTER 2014-2015 IN FIVE ITALIAN CITIES: MAPEC (MONITORING AIR POLLUTION EFFECTS ON CHILDREN FOR SUPPORTING PUBLIC HEALTH POLICY) STUDY**

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In the recent literature there has been an increased interest in the effects of particulate matter (PM) air pollution on health. The objective of the MAPEC (Monitoring Air Pollutions Effects on Children for supporting public health policy) study is to evaluate the associations between the concentrations of urban air pollutants and biomarkers of early biological effect in oral mucosa of 1,000 children recruited from first grade schools of 5 Italian towns (Brescia, Torino, Pisa, Perugia and Lecce) characterized by different PM levels. Child exposure to urban air pollution was evaluated by collecting ultra-fine PM (PM<sub>0.5</sub>) samples in the school areas on the same day of biological sampling. PM<sub>0.5</sub> organic extracts were chemically analyzed (PAH, Nitro-PAH) and tested on human pulmonary A549 cell line by comet assay and micronuclei test and on Salmonella (TA100, TA98, TA98NR and YG1021 strains) by Ames test. Chemical analysis showed that PM<sub>0.5</sub> varied significantly among the five considered towns, with different percentage contribution to PM<sub>10</sub> (range 19.6-63%). The results of Ames test showed that all PM<sub>0.5</sub> extracts induced indirect mutagenic effects in TA98 strain (net revertant/m<sup>3</sup> range 0.3-1.5) while lower effect was observed with TA100 strain. Ames test with TA98NR and YG1021 strains showed the presence of nitroaromatic compounds. Except for some sporadic samples, no genotoxic or oxidative effect induced by PM<sub>0.5</sub> extracts was demonstrated using comet assay and micronuclei test. These results could be explained by low level of air pollution observed in this winter sampling (2014-2015) and suggest further studies on biological effects of PM fractions, in particular, of the finest fraction of PM.

**P72.****EARLY BIOLOGICAL EFFECTS (CYTOME ASSAY) IN CHILDREN EXPOSED TO DIFFERENT LEVELS OF PM<sub>0.5</sub> IN FIVE ITALIAN CITIES DURING WINTER 2014-2015: MAPEC (MONITORING AIR POLLUTION EFFECTS ON CHILDREN FOR SUPPORTING PUBLIC HEALTH POLICY) STUDY.**

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Epidemiological studies have shown that air pollution can cause harmful health effects. In particular, it was found a consistent association between exposure to particulate matter (PM) and incidence and mortality for several chronic diseases. The International Agency for Research on Cancer of WHO has ranked air pollution among the human carcinogens, and genotoxic damage was indicated as the main mechanism responsible for the adverse effects. The children are more vulnerable than adults to the effects of airborne agents for several reasons. The MAPEC (Monitoring Air Pollution Effects on Children for supporting public health policy) study aims to identify the biological damage markers in buccal cells, such as the presence of micronuclei, which are predictive of the onset of chronic diseases in adulthood. The micronucleus cytome assay was performed in exfoliated buccal mucosa (BM) cells of about 1,000 children (6-8 years-old) from five Italian towns (Brescia, Torino, Pisa, Perugia and Lecce) characterized by different concentrations of air pollutants. The BM cells were collected using a small-headed toothbrush, were fixed on microscope slides and stained with Feulgen/LightGreen for both bright field and fluorescence microscopic analysis. The biomarkers of genome damage (i.e. micronuclei and nuclear buds) were evaluated only in normal differentiated cells. The results from microscope analysis of cells sampled on winter 2014-2015 suggest a significant reduction of micronuclei frequency from Northern to Southern Italy, except for Torino. The frequency of micronuclei is proportional to the annual average concentration of PM in the air.