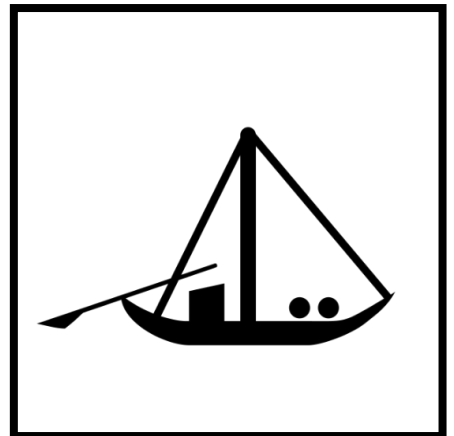
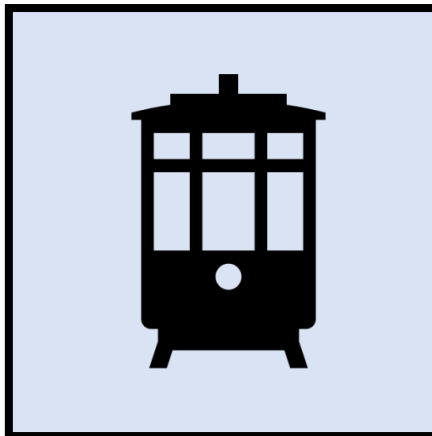
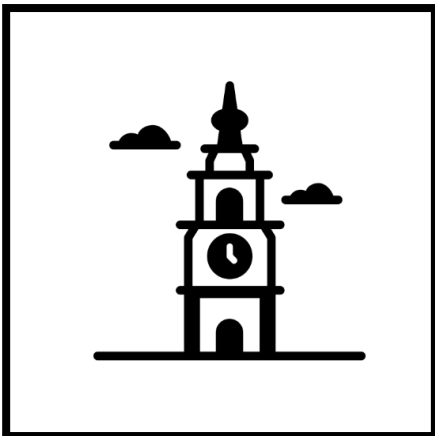
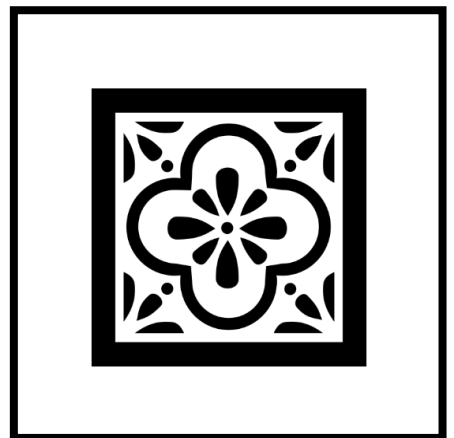
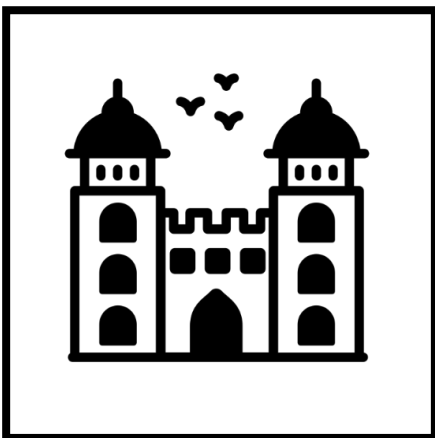
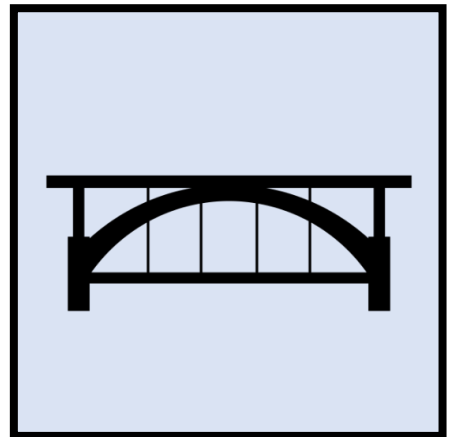
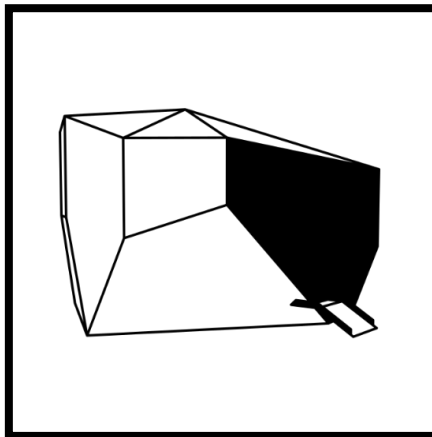


# ISBM-12

*Next Generation Biomonitoring*

## Abstract Book



2023 | Porto, Portugal



**Occupational Toxicology**  
*ICOH Scientific Committee*



**REPÚBLICA  
PORTUGUESA**

SAÚDE



**SNS** SERVIÇO NACIONAL  
DE SAÚDE



*Instituto* **Nacional de Saúde**  
*Doutor Ricardo Jorge*



**ISPUP**  
INSTITUTO DE SAÚDE PÚBLICA  
DA UNIVERSIDADE DO PORTO



# WELCOME

On behalf of the Organizing Committee, I am glad to welcome you to take part in the 12th International Symposium on Biological Monitoring in Occupational and Environmental Health (ISBM-12) under the motto Next Generation Biomonitoring this June 21-23, 2023, in Porto, Portugal.

This three-day multidisciplinary event provides a forum for both internationally established and young researchers to exchange advanced knowledge on biological monitoring in occupational and environmental health fields.

The Congress will be comprised of keynote lectures given by world-renowned scientists, in addition to oral and poster sessions. State of the art developments in different fields of toxicology, environmental sciences, human biomonitoring, new methodologies and developing expertise will be covered during presentations. Together, we will delve deep into the frontiers of our respective fields, engaging in thought-provoking discussions, sharing ground-breaking research, and challenging conventional wisdom. This 12<sup>th</sup> edition brings new cutting-edge thematic into the scientific discussion, where the parallel sessions will enhance the networking among all participants.

Delegates will vote on the Best Poster and Oral communications.

Welcome to ISBM-12. Welcome to Porto. Bom São João!



Chair of ISBM-12



# Scientific Committee

**Ana Teresa Reis** (Portugal)

**Blanca Laffon** (Spain)

**Carla Costa** (Portugal)

**João Paulo Teixeira** (Portugal)

**Joana Madureira** (Portugal)

**Solange Costa** (Portugal)

**Sónia Fraga** (Portugal)

**Silvia Fustinoni** (Italy)

**Radu Duca** (Luxembourg)

**Ivo Iavicoli** (Italy)

**Michael Riediker** (Switzerland)

**Sashikala Chandrasekar** (India)

**Stefan Mandic Rajcevic** (Italy)

**Natalia Pawlas** (Poland)

**Vanessa Valdiglesias** (Spain)

**Veruscka Leso** (Italy)

# Partners



# Organising Committee

This scientific event is organized by the National Health Institute Dr Ricardo Jorge (INSA), Instituto de Saúde Pública da Universidade do Porto (ISPUP), and the Scientific Committee of Occupational Toxicology (SCOT) of the International Commission on Occupational Health (ICOH), in collaboration with other ICOH's Scientific Committees, namely the Scientific Committee on Nanomaterial Workers' Health, the Scientific Committee of Rural Health: Agriculture, Pesticides and Organic Dusts and the Scientific Committee of Toxicology of Metals.



Occupational Toxicology  
ICOH Scientific Committee



REPÚBLICA  
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SAÚDE



SNS SERVIÇO NACIONAL  
DE SAÚDE



Instituto Nacional de Saúde  
Doutor Ricardo Jorge



ISPUP  
INSTITUTO DE SAÚDE PÚBLICA  
DA UNIVERSIDADE DO PORTO

## **João Paulo Teixeira – Chair (INSA, ISPUP)**

**Ana Teresa Reis (INSA, ISPUP)**

**Carla Costa (INSA, ISPUP)**

**Filipa Esteves (INSA, ISPUP)**

**Joana Madureira (INSA, ISPUP)**

**Joana Pires (INSA, ISPUP)**

**Radu Duca (ICOH, SCOT)**

**Silvia Fustinoni (ICOH, SCOT)**

**Solange Costa (INSA, ISPUP)**

**Sónia Fraga (INSA, ISPUP)**

## ***Support to Congress organization and event***

Ana Margarida Faria (INSA, ISPUP) and Georges Hatem (INSA, ISPUP)

## ***Event Support***

Carla Valongo (INSA)

# Congress Information

## Website

[www.isbm12.com](http://www.isbm12.com)

## CONTACTS

[contact@isbm12.com](mailto:contact@isbm12.com)

## CONGRESS APP

We will use an online platform called Whova for our event!

Download Whova and take your event mobile.

Get Whova from the App Store or Google Play



## VENUE CONGRESS

### SUPER BOCK ARENA

### PAVILHÃO ROSA MOTA

Rua de Dom Manuel II

Jardins do Palácio de Cristal

4050-346 Porto



Throughout all days of the congress, the registration desk and the staff will be available on site to answer all your questions and help you with any requests regarding the event.

## INTERNET ACCESS

Free internet network

## LOCAL TRANSPORT

→ **Metro** (more informations: [www.metroporto.pt](http://www.metroporto.pt))

→ **Bus** (more informations: <https://www.stcp.pt>)

→ **Other:** Taxis in Porto are either beige or black with a green coloured roof. Uber and other mobility apps (e.g., Bolt) are available in Porto.



## CERTIFICATE OF ATTENDANCE/ COMMUNICATION

Certificates will be sent via email after the Congress.

## AWARDS

- ISBM-12 Best Oral and Poster Communication (online voting by delegates)
- ISBM-12 Best Photo Contest (online voting by delegates)
- ISBM-12 Travel Attendance Grant Award

## WELCOME RECEPTION

The Organising Committee welcomes all delegates to a welcome cocktail on the afternoon of 21 June following the Keynote Lecture by Stefano Bonassi.

## CONGRESS DINNER

The Congress Dinner will be held in Casa do Vinho Verde (Palacete Silva Monteiro), Rua da Restauração 318, 4050-501 Porto, about 4 min walking (280m) from Super Bock Arena – Pavilhão Rosa Mota (Venue). <https://rb.gy/7kw5f>

## LOCAL TIME

The standard time zone in Porto, Portugal is GMT (Greenwich Mean Time).

## CLIMATE

The city of Porto is located along the Atlantic Ocean in northern Portugal, featuring the Mediterranean climate with moderate temperatures and rainy weather in the winter season, and milder summers due to the nearby presence of cold ocean currents that bring fog but prevent rain. In October temperatures are around 20°C by day and 13°C - 14°C by night.

# Programme at a Glance

Wednesday, June 21st

8h30

CONGRESS REGISTRATION

AUDITORIUM

ROOM PORTO

9h15

Opening Ceremony

9h30

Keynote Lecture

10h10

Coffee Break & Poster Viewing (Session P1) | Exhibition/ Foyer Area

10h40

Session I: Challenges in occupational biomonitoring

Session II: Building knowledge to protect susceptible and vulnerable population

11h00

11h20

11h40

12h00

12h20

Congress Registration

12h40

Lunch & Poster Viewing (Session P1) | Exhibition/ Foyer Area

14h00

Special Session I: Multi-national occupational biomonitoring studies within HBM4EU and PARC supporting policy making in Europe

Session III: Metals and minerals exposure-from *in utero* to workplace

14h20

14h40

15h00

15h20

15h40

Keynote Lecture

16h20

17h20

Welcome Reception & Poster Viewing (Session P1) | Exhibition/ Foyer Area

## Thursday, June 22nd

	AUDITORIUM	ROOM PORTO	ROOM DOURO
8h40	Keynote Lecture		
9h30	Session IV: New methods and new biomarkers for human biomonitoring	Session V: Open questions on environmental biomonitoring	Session VI: The never-ending story of pesticides
9h50			
10h10			
10h30	Coffee Break & Poster Viewing (Session P2)   Exhibition/ Foyer Area		
11h00	Session IV: New methods and new biomarkers for human biomonitoring (cont.)	Session V: Open questions on environmental biomonitoring (cont.)	Session VI: The never-ending story of pesticides (cont.)
11h20			
11h40			
12h00	Lunch & Poster Viewing (Session P2)   Exhibition/ Foyer Area		
13h40	Keynote Lecture		
14h30	Special Session II: Application of new matrices and biomarkers in multi-national occupational biomonitoring studies within HBM4EU and PARC	Session VII: From legacy to emerging chemicals	Session VIII: Dealing with mixed-chemical exposure, are we there yet?
14h50			
15h10			
15h30	Coffee Break & Poster Viewing (Session P2)   Exhibition/ Foyer Area		
16h00	Special Session II: Application of new matrices and biomarkers in multi-national occupational biomonitoring studies within HBM4EU and PARC (cont.)	Session VII: From legacy to emerging chemicals (cont.)	Session VIII: Dealing with mixed-chemical exposure, are we there yet? (cont.)
16h20			
16h40 17h00			
19h00	Congress Dinner		

Congress Registration

\*

**Friday, June 23rd**

	<b>AUDITORIUM</b>	<b>ROOM PORTO</b>
9h30	Keynote Lecture	
10h10	Coffee Break   Exhibition/ Foyer Area	
10h40	Special Session III: Multidisciplinary approaches in exposome research	Session IX: From HBM to risk assessment
11h00		
11h20		
11h40		
12h00		
12h20		
12h40	Closing Ceremony & Awards Presentation	
13h00		

Congress Registration



### **P30. Effect of individual's characteristics on volatile organic compounds profile analysed by an electronic nose**

**K. Slezakova<sup>1</sup>, J. Cavaleiro-Rufo<sup>2,3</sup>, F. Esteves<sup>2,3,4</sup>, S. Costa<sup>2,3,4</sup>, C. Costa<sup>2,3,4</sup>, M.C. Pereira<sup>1</sup>, J.P. Teixeira<sup>2,3,4</sup>, and Joana Madureira<sup>2,3,4</sup>**

<sup>1</sup>LEPABE-ALiCE, Faculty of Engineering, University of Porto, Porto, Portugal; <sup>2</sup>EPIUnit-Institute of Public Health, University of Porto, Porto, Portugal; <sup>3</sup>Laboratory for Integrative and Translational Research in Population Health (ITR), Porto, Portugal; <sup>4</sup>Environmental Health Department, National Institute of Health, Porto, Portugal

**Presenting author contact:** joana.madureira@insa.min-saude.pt

Breath analysis using an electronic nose (eNose) is a technology for exhaled volatile organic compounds (VOCs) that has shown potential in the diagnosis of respiratory diseases. However, the effect of an individual's characteristics in the exhaled VOCs profile is far from fully understood. This pilot study aimed to identify the relevant characteristics of participants that may influence the VOCs profiles by the eNose. The study population consisted of 91 volunteers (57.1% males) with an average age of 38 years, randomly recruited among nonexposed individuals to VOCs in Porto, Portugal. Exhaled breath air samples were analysed using the Cyranose<sup>®</sup> 320. Physiological (e.g. height, weight) and sociodemographic characteristics, behavioural patterns, and occupational/environmental exposures were collected through a self-administered questionnaire. Other data (e.g. type of consumed food, liquids and oral hygiene) was recorded via face-to-face interviews. Results showed that exhaled VOCs profiles are influenced by water intake prior to breath sample air collection. It is suggested that individuals should abstain from drinking water for 2.5 h before VOC analysis. This work will support other ongoing research in occupational exposure scenarios, such as forest firefighters', to further the understanding of this under-explored scientific area, since we hypothesise that VOCs patterns will differ between persons occupationally exposed to VOCs and those unexposed.

**Acknowledgments:** This work was financially supported by LA/P/0045/2020 (ALiCE); UIDB/00511/2020 - UIDP/00511/2020 (LEPABE); PTDC/CTAAMB/3040/2021, PCIF/SSO/0017/2018 financed by Fundação para a Ciência e a Tecnologia (FCT) through Ministério da Ciência, Tecnologia e Ensino Superior and national funds. J. Madureira and F. Esteves are supported by FCT and European Social Fund through Programa Operacional Capital Humano (POCH) via the respective fellowships: SFRH/BPD/115112/2016 and UI/BD/150783/2020

**Keywords:** Volatile organic compounds; electronic nose; multivariate analysis