

# Sampling and Analytical Challenges in Meeting Ever- Lower OELs for Metals and Metalloids

## SYMPOSIUM

Occupational exposure limit values for metals and metalloids are decreasing, especially for metals or metalloids identified as carcinogens or sensitizers. Increasingly, size-specific sampling fractions (e.g. inhalable and/or respirable) are prescribed by regulation. These very low OELVs bring challenges to the measurement methods. All portions of these methods, including sampling, sample dissolution and the analytical methods themselves must be optimized dramatically in order to attain lower method detection limits while maintaining high data quality. For sampling, this is requiring new high flow samplers for inhalable and respirable fractions. For laboratory analysis, techniques must consider sensitivity, reagent purity and solubility issues for metal compounds. Some of the current standardized methods may no longer be adequate for ever-lower elemental OELVs. The learning outcomes of this symposium are: 1. Understand the growing challenges in trace-level sampling and analysis for metals and metalloids 2. Identify methodologies to meet particle size-specific sampling requirements (e.g. inhalable, respirable) 3. Describe important considerations for sample preparation and laboratory analysis for metals and metalloids at trace levels Practical application can be described as follows: 1. Help IH/OH professionals in selecting the right sampling equipment for trace-level metals and metalloids 2. Ensure IH/OH professionals understand the importance of proper laboratory analysis in obtaining the results they need for decision making

### Special Considerations and Recent Developments in Preparation of Samples for Trace Beryllium Analysis

Michael Brisson (Savannah River National Laboratory, USA)

### Development of a microwave pressure digestion method for determining the total metal content in dust at workplaces

Katrin Pitzke (IFA, Germany)

### Impact of the LOD and LOQ on the analytical feasibility of measuring nickel in workplaces

Steven Verpaele (Nickel Institute, Belgium)

## MODERATOR



Steven Verpaele

Steven Verpaele, Master of science in environmental chemistry – Industrial Hygiene. He did a lot of research work on sampling and analysis for dust and elemental compositions in workplace atmospheres, especially silica. Working for 7 years as head of the environmental section at the University College of Ghent in the laboratory for occupational hygiene and 11 years as principal occupational hygienist for an External Company for Occupational Prevention and Protection. Currently he is the industrial hygiene manager at the Nickel Institute (global association of leading primary nickel producers). He is also founder and president of the Belgian Centre for Occupational Hygiene, a non-profit organization focused on research and laboratory services to industry regarding occupational hygiene exposure assessment. BeCOH has an MOU with Workplace Health Without Borders (WHWB) and provides free of charge analysis for OH projects. He has more than 20 years' experience as Industrial Hygienist and as an expert in different ISO and CEN workgroups mainly focused on workplace atmosphere.

## SPEAKERS



Michael Brisson

Mike Brisson is a Fellow Technical Advisor with over 40 years overall laboratory experience, currently at Savannah River National Laboratory, with focus areas in spectroscopic and chromatographic techniques. Brisson has had lead roles in start-up of a variety of nuclear analytical chemistry projects, including nuclear nonproliferation and nuclear laboratory design and support for the Fukushima Daiichi remediation effort. Analysis of trace-level metal contaminants, particularly beryllium, has been a key focus area. From 2007-2013, Brisson was chairman of the Beryllium Health and Safety Committee (<https://berylliumhealthandsafetycommittee.com>), involving several U.S federal agencies as well as the U.K., and remains active in the BHSC.



Katrin Pitzke

Mrs Pitzke currently works as Section Manager of Metal Analysis and Deputy Head of Department Chemical and Biological Hazards at the Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA). After studying chemistry, she worked for 10 years in the IFA metal analysis laboratory, where she established analytical methods for the determination of metals at the workplace using GF-AAS, ICP-OES and ICP-MS. After taking over the laboratory management, she moved to the head of unit in 2015. The cooperation in different working groups for the development, documentation and establishment of measuring procedures for air monitoring of metals at workplaces (e. g. MAK Collection and ISO/DIN) belongs to her tasks as well as the support with investigations of occupational diseases and the evaluation of workplaces. Furthermore, she worked on the technical rule for hazardous substances of carcinogenic metals in the workplace atmosphere in Germany.