

PERSONAL INFORMATION

Name	BEATRICE BOCCA
Address	VIA B. MARLIANO 14, 00162 - ROME, ITALY
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Date of birth	08/09/1972
Nationality	Italian

WORK EXPERIENCES

Dates (from - to)	2021-current
Employer's name and locality	ISS (Istituto Superiore di Sanità), Rome
Sector	Human Exposure to Environmental Contaminants – Dept. Environment and Health, ISS
Occupation or position held	Senior Researcher
Main activities and responsibilities	<p>The research activity has maintained a strong interest on the topic of exposure assessment to metals and other emerging contaminants such as nanomaterials from the environment to humans - in a One Health perspective - for the purpose of a robust and accurate risk assessment and management of these substances.</p> <p>Institutional activity focused on the different aspects of exposure assessment to metals and nanomaterials and toxicological risk with production of many technical-scientific opinions and as expert in several working groups on the matter.</p>
Dates (from - to)	2002-2021
Employer's name and locality	ISS (Istituto Superiore di Sanità), Rome
Sector	Human Exposure to Environmental Contaminants – Dept. Environment and Health, ISS
Occupation or position held	Researcher
Main activities and responsibilities	<p>Research activity focusing on the assessment of human exposure to metals and nanomaterials in living and working environments through environmental monitoring and human biomonitoring (BMU) campaigns</p> <p>Assessment of exposure and possible health effects associated with exposure using biomarkers of exposure, effect and internal dose.</p> <p>Study of environmental and behavioural factors as determinants of exposure and as risk factors for diseases.</p> <p>Institutional activity including analytical determinations and technical-scientific opinions in the area of exposure to metals and nanomaterials, providing the scientific basis to contribute to risk assessment, field decisions, regulatory, and public health interventions.</p>
Dates (from - to)	2000 – 2002

Employer's name and locality	ISS (Istituto Superiore di Sanità), Rome
Sector	Animal Nutrition Unit – Dept. Veterinary Medicine, ISS
Occupation or position held	Contract researcher on the Ministry of Health Project entitled “Food poisoning related to the use of drugs in animals: assessment of the health risk through epidemiological, biochemical-clinical and pharmacological studies”
Main activities and responsibilities	Validation of analytical methods for organic contaminants and drugs in animals and animal foods Safety and risk assessment of foods of animal origin
Dates (from - to)	1998-2000
Employer's name and locality	ISS (Istituto Superiore di Sanità), Rome
Sector	Analytical Chemistry Unit, Dept. Applied Toxicology, ISS
Occupation or position held	Contract researcher on the European Commission Project entitled “Assessment of the environmental contamination risk by Platinum, Rhodium and Palladium from automobile catalyst (CEPLACA)”
Main activities and responsibilities	Validation of methods (ICP-OES, Sector Field-ICP-MS, Quadrupole-ICP-MS) for Platinum Group Elements (PGEs) in the environment, food and humans; Exposure evaluation and risk assessment to PGEs released from automobile
Dates (from - to)	1997-1998
Employer's name and locality	ISS (Istituto Superiore di Sanità), Rome
Sector	Dairy Foods Unit, Food Laboratory, ISS
Occupation or position held	Contract researcher on the ISS project entitled “Risk factors for Mother-Child Health” - “Nutrients and Chemical Contaminants in Human Milk”
Main activities and responsibilities	Validation of methods for metals and metal species (ICP-OES, Sector Field-ICP-MS, Quadrupole-ICP-MS) in human milk and dairy products Exposure evaluation and health risk assessment to metal-containing foods for mother and child

EDUCATION AND TRAINING

Date	1997
Name and type of organisation providing education and training	University of Rome “La Sapienza”, Rome
Principal subjects/occupational skills covered	Chemical analysis of contaminants and nutrients in food and biological samples by advanced analytical techniques as optical and mass spectrometry (ICP-OES, ICP-MS) and liquid chromatography (HPLC, IC)
Title of qualification awarded	Degree in Chemistry (110 <i>cum laude</i>)

PERSONAL SKILLS

Mother tongue	Italian
Other languages	English
Communication skills	Good communication skills achieved through the experience as speaker and expert in in several meetings and working groups at national and EC level
Organisational / managerial skills	Participation in several national and EC projects and expert in working groups
Job-related skills	<p>Main skills in the field of human biomonitoring, reference values, exposure evaluation and risk assessment for metals, metal species and metallic nanomaterials</p> <p>Expertise in developing and validating (ISO-IEC 17025) methods using advanced techniques (ICP-OES, Sector Field-ICP-MS, Quadrupole-ICP-MS) and hyphenated techniques (HPLC, Ion Chromatography-ICP-MS).</p>

ADDITIONAL INFORMATION

Editorial Board	<p>Member of the Editorial Board of Toxics (2022-present)</p> <p>Member of the Editorial Board of The Open Chemical and Biomedical Methods Journal (2014-present)</p>
Reviewer	Reviewer for Environmental Research, J. Neurological Science, Regulatory Toxicology and Pharmacology, Clinica Chimica Acta, Int. J. Environ. Health, Microchimica Acta, J Brazilian Chemical Society, TRAC, etc.

Biomarkers of exposure and effect in human biomonitoring of metal-based nanomaterials: their use in primary prevention and health surveillance. Bocca B, Battistini B., *Nanotoxicology* 2024.

The endocrine disrupting effects of nanoplastic exposure: A systematic review. Leso et al., *Toxicology and Industrial Health*, 2023, 39(11), p.613–629.

Engaging One Health in heavy metal pollution in some selected Nigerian Niger Delta region: a systematic review of pervasiveness, bioaccumulation and subduing environmental health challenges. Onyena et al., *Biological Trace Element Research* 2024, 202(4), p.1356–1389

Pervasiveness, bioaccumulation and subduing environmental health challenges posed by polycyclic aromatic hydrocarbons (PAHs): A systematic review to settle a one health strategy in Niger Delta, Nigeria. Udom et al., *Environmental Research* 2023, 226, 115620.

An Update Overview on Mechanistic Data and Biomarker Levels in Cobalt and Chromium-Induced Neurodegenerative Disease. Ajibo et al., *Biological Trace Element Research*, 2023

The HBM4EU chromates study – Outcomes and impacts on EU policies and occupational health practices. Santonen et al., *International Journal of Hygiene and Environmental Health*, 2023, 248, 114099.

Polycyclic aromatic hydrocarbons in fish (fresh and dried) and public health in Nigeria: a systematic review. Emoyoma et al., *International Journal of Environmental Health Research*, 2023.

Exposure to heavy metals and red blood cell parameters in children: A systematic review of observational studies. Capitão et al., *Frontiers in Pediatrics* 2022, 10:921239

E-WASTE threatens health: The scientific solution adopts the one health strategy. Frazzoli et al. *Environmental Research* 2022, 212(1):113227

Environmental Substances Associated with Chronic Obstructive Pulmonary Disease—A Scoping Review. Elonheimo et al. *International Journal of Environmental Research and Public Health* 2022, 19(7):3945

Mechanistic considerations and biomarkers level in nickel-induced neurodegenerative diseases: An updated systematic review. Anyachor et al., *IBRO Neuroscience Reports*, 2022, 13, p.136–146-

Toxic Metals and Non-Communicable Diseases in HIV Population: A Systematic Review. Folorunso et al., *Medicina* 2021, 57(5)

Book Chapter. Platinum. Santonen T et al. In: Nordberg GF. ed. *Handbook on the Toxicology of Metals*, 5th edition, Academic Press/Elsevier, 2021.

Trace Elements Exposure and Risk in Age-Related Eye Diseases: A Systematic Review of Epidemiological Evidence. Bede-Ojima et al. *J Environ Sci Health C Toxicol Carcinog* 2021, 39(3):293-339

Scoping Review - The Association between Asthma and Environmental Chemicals. Mattila T et al. *Int. J. Environ. Res. Public Health* 2021, 18, 1323

An overview on amyotrophic lateral sclerosis and cadmium. Oggiano et al. *Neurological Sciences* 2021,42:531–537

Amyotrophic lateral sclerosis and lead: A systematic update. Farace et al. *Neurotoxicology*, 2020;81:80–88.

A medical-toxicological view of tattooing. Laux et al. *The Lancet* 2016;387(10016):395-402

The One Health perspective in trace elements biomonitoring. Frazzoli et al. *Journal of Toxicology and Environmental Health, Part B. Critical Reviews*. 2015;18(7-8):344-370

Metal allergens of growing significance: epidemiology, immunotoxicology,

strategies for testing and prevention. Forte et al. Inflammation and allergy drug targets 2008;7(3):145-162

Guest editor of the special issue "Allergenic metals in consumer products and food: development of quantification methods and cases of sensitization".

Open chemical and biomedical methods journal 2009;2:24-64

Book Chapter 4. Microwave digestion procedures for human matrices: principles and applications to metal analysis. Bocca B, Forte G. In: Marchetti A, ed. Microwaves: theoretical aspects and practical applications in chemistry. Trivandrum: Transworld Research Network; 2011. p.139-182.

Book Chapter 22. Environmental contaminants: heavy metals. Forte G, Bocca B. In: Nollet Leo ML, Toldrá F, ed. Handbook of analysis of edible animal by-products. CRC Press; 2011. p.403-440.

Book Chapter 2. Method validation and uncertainty estimate in the quantification of toxic metals in foods of animal origin. Forte G, Bocca B. In: Koeffer EN, ed. Progress in food chemistry New York: Nova Science Publishers; 2008. p.47-72.

Working groups (WGs)

Expert for the European Food Safety Authority (EFSA) on "Nanotechnology"
Member of the WG on "Nanomaterials Definition" at the European Commission DG for Internal Market, Industry, Entrepreneurship and SMEs.
Member of the Subgroup "Consumer Safety Network Subgroup - Tattoos and Permanent Make-up (STPM)" at the European Commission DG for Health and Consumers.

Expert for the "ICP Working Party (Inductively-Coupled Plasma)" at the European Pharmacopoeia Commission.

Expert for the Superior Health Council on "Environmental and occupational exposure to pollutants emerging including nanomaterials".

Expert for the SMT (Temporary Mission Structure) "Nanotechnologies, impact on health and on the environment" at the ISS.

National Expert EC TAIEX Study Visit on Implementation of Cosmetics Regulation and Toy Safety Directive (TAIEX INT MARKT IND/STUD 55743)

National expert EC TAIEX Study Visit on implementation of ICP-MS and AAS analytical techniques in chemical elements determination (TAIEX, AGR IND/STUD 53297)

Member of the following national and international WGs: "Cosmetics WG (WG-COSM)"; WG "Evaluation of occupational exposure to toxic substances and risk to health"; WG "Role of metals in neurodegenerative diseases"; WG "SPoTT Surveillance on the health of the population near the Turin waste-to-energy plant"; WG "ABC Environment and Biomonitoring in the Civitavecchia area"; WG "Toxic Exposures and Health in Nigeria"

Member of Committees

Organizing Committee “Convegno nazionale. I valori di riferimento: applicazioni per la tutela della salute umana negli ambienti di vita e di lavoro” ISS 19 Ottobre Roma 2023.

Selection Committee for researchers in the area “Ricerca ed Innovazione Responsabile delle nanotecnologie” ISS 6 April Rome 2016.

Technical Committee “Fornitura di un sistema di separazione e determinazione di nanoparticelle per il Dip. Ambiente e Salute” (CIG: 65208729CC-CUP J15C13007050003) ISS 29 March Rome 2016.

Scientific Committee “Cadmium Symposium” 25-27 June Sassari 2015.

Scientific Committee “Giornata Informativa sui Prodotti Cosmetici: aspetti regolatori e problematiche emergenti” 20 June ISS Rome 2013.

Scientific Committee “Cadmium Symposium” 8-9 June Sassari 2012.

Organizing Committee “IMHE International meeting on Health and Environment: Challenges for the Future” 9-11 December ISS Rome 2009.

Technical Committee “Neurodegenerazione: Esperienze Attuali e Prospettive Future” 29 October ISS Rome 2004.

Memberships

Member of the Directive Board of the Scientific Society SIVR - Italian Society of Reference Values, since 2022 to present.

Member of the International Scientific Society ISRCT - International Society for Research on Cadmium and Trace Element Toxicity, from 2021 to present.

Member of the scientific society ASETOV - Italian Association for the Study of Elements in Trace in Living Organisms, from 2017 to present.

Member of the international society FESTEM - Federation of European Societies on Trace Elements and Minerals, from 2017 to present.

Member of the Mass Spectrometry Division (Italian Chemical Society, 2003-04).

Responsibilities

Responsible of Methods Validation according to UNI CEI EN ISO/IEC 17025 of the Bioelements and Health Unit, Dept. Environmental and Health, ISS.

Responsible of the Accredited Method “Determinazione di Elementi in Matrici Biologiche-MI05” ACCREDIA-ISS.

Responsible of the Accredited Method “Determinazione degli Elementi in Cosmetici”-MI08 ACCREDIA ISS.

Responsible of the Accredited Method “Determination of Cadmium and Lead in Honey” in the CRL (Community Reference Laboratory on Residues)-ISS.

Responsible of the Accredited Method “Determination of Arsenic, Cadmium, Copper and Lead in Freeze-Dried Milk” in the CRL (Community Reference Laboratory on Residues)-ISS.

Honour and awards

Auditor/Responsible for Audit Group of SGQ-CEPAS (Quality Management Systems Auditors/Lead Auditors), 2004.

Award for the best poster presented at the Ecopa Symposium 2019 Conference entitled "Preliminary assessment of nanoparticles in tattoo ink. In vitro and ex-vivo approaches"

Lead of Projects

Responsible ISS of the study "Occupational Survey in the Waste management sector" within the European project PARC-Horizon Europe.

Responsible ISS of the study "Occupational Survey in the Health Care Sector" within the European project PARC-Horizon Europe.

Co-leader ISS of the BioPlast4SAFE project "Biomonitoring of biodegradable micro and nanoplastics: from the environment to man in a one health perspective" – PNC.

Coordinator of the MAPS project "Mapping Adverse outcome Pathways of neurodevelopmental and neurodegenerative disorders" (HBM4EU-Human Biomonitoring for Europe HORIZON2020) and leader of Task 1 "HBM data and chemical analysis".

Responsible ISS of the study "HBM4EU-Occupational biomonitoring study on chromium and other harmful chemicals" within the European project HBM4EU.

"Chemical Group Leader for Hexavalent Chromium" within the European project HBM4EU.

Co-leader ISS of the SPoTT2 project "Plan for health surveillance and awareness of change in the state of health of the population residing near the plant waste-to-energy of Turin" (Metropolitan City of Turin).

Leader ISS of UO2 "Quantitative and qualitative analyzes on blood and urine samples and in vitro media" within Ministry of Health project ARTOO "Assessment of skin and systemic toxicity in patients undergoing laser tattoo removal".

Responsible ISS of Action 5 "Determination and Evaluation of Biomarkers of exposure in populations residents near sources of known contamination" within the IZS-ISS SPES project "Impact environment and food safety: an integrated study to evaluate exposure to risk factors environment of residents in the Campania region as part of the integrated monitoring plan transparent campania".

Responsible ISS of the internal project "Biological monitoring program and identification of biological indicators of exposure in workers exposed to metal nanoparticles" in collaboration with the Federico II University of Naples.

Leader ISS of Line 2.1.1 "Chemical-physical characterization of nanomaterials" within the Lazio Region RInnovaReNano project "Responsible research and innovation of nanotechnologies: safety assessment and training adaptation, to support industrial development e creation of an information platform on nanotechnology aimed at accessing and dissemination of knowledge".

Leader ISS of UO2 "Development of qualitative/quantitative analytical techniques for nanomolecules and phytosanitary action" within the Ministry of Health project "Development of an approach methodology for the chemical-physical characterization and the qualitative/quantitative determination of nanopesticides".

Publications: Ca. 300; HI (Scopus): 43; papers in Scopus: 165; Orcid ID 0000-0002-6503-6026.

I authorize the processing of my personal data pursuant to Legislative Decree 30 June 2003, n. 196 "Code regarding the protection of personal data"

Date 26/03/2024

Beatrice Bocca

