

Special Issue

Metal Toxicity and Particle Toxicity

Message from the Guest Editor

Environmental pollution by metals and particles is increasingly becoming a problem characterized by adverse effects worldwide. These pollutants are commonly present in waters, soils, and the atmosphere due to the rapid development of mining, smelting operations, transport, agriculture, metal-using industries, inadequate waste management, fertilizers, and pesticides. Some metals play key biological functions in the regulation of growth and development. In contrast, others can accumulate in one or more different organs, causing numerous damage and metabolic changes to plants and animals, even at low concentrations. Currently, 18 metals and one metalloid (As) are on the 150 National Priorities List from the Agency for Toxic Substances and Disease Registry (ATSDR). Moreover, each metal has unique features and physicochemical properties that confer specific toxicological mechanisms of action in cells. Due to multiple sources and formation pathways, chemical particles have diverse sizes, surface charges, shapes, and chemical compositions, leading to their differential toxicological effects. However, understanding the molecular mechanisms and establishing the toxic impact

Guest Editor

Dr. Alicja Piotrowska-Niczyporuk

Department of Plant Biology and Ecology, Faculty of Biology, University of Białystok, Ciołkowskiego 1J Str., 15-245 Białystok, Poland

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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Editor-in-Chief

Prof. Dr. Maurizio Battino

Department of Odontostomatologic and Specialized Clinical Sciences,
Sez-Biochimica, Faculty of Medicine, Università Politecnica delle
Marche, Via Ranieri 65, 60100 Ancona, Italy

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