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Heavy Metal Toxicity Effects on Plants

Guest Editor:

Dr. Ilektra Sperdouli
Institute of Plant Breeding and Genetic Resources, HAO-Demeter, Thermi, Greece

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Message from the Guest Editor

Although heavy metals are naturally present in the soil, geologic and anthropogenic activities increase the concentration of these elements to amounts that are harmful to plants. Some of these activities include mining and smelting of metals, burning of fossil fuels, use of fertilizers and pesticides in agriculture, and production of batteries and other metal products in industries, sewage sludge, and municipal waste disposal. Growth reduction as a result of changes in physiological and biochemical processes in plants growing on heavy metal polluted soils has been recorded. Some of the heavy metal phytotoxic manifestations include disturbance of nutrient uptake and translocation, photosynthetic reduction (decrease of photosynthetic pigments, inhibition of electron transport, decrease of CO_2 fixation, chloroplast disorganization, photooxidative damage), generation of reactive oxygen species (ROS), inhibitions of antioxidative enzymes, cellular redox imbalance, DNA damage, and protein oxidation. The assessment of heavy metal toxicity effects on plants will enable the evaluation of heavy metal plant-tolerant species and their use for phytoremediation of contaminated soils.

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Editor-in-Chief

Dr. Demetrio Raldúa
Department Environmental Chemistry, IDAEA-CSIC, Jordi Girona 18, 08034 Barcelona, Spain

Message from the Editor-in-Chief

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Contact Us

Toxics Editorial Office
MDPI, St. Alban-Anlage 66
4052 Basel, Switzerland

Tel: +41 61 683 77 34
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