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*Editorial*

# Special Issue on Frontier Research in Waters, Air and Wastes

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## 1. Introduction

To solve global problems about water and air pollution and waste production, research plays a key and essential role.

This Special Issue aimed to collect up-to-date papers that explore the latest innovations in waters, air, and waste. Potential topics included but were not limited to the following: (i) waters (drinking water and wastewater treatment, emerging contaminants, water scarcity, residues of water treatment characterization and disposal, sludge reuse options, wastewater-based epidemiology, water characterization, advanced oxidation processes, treatment plant optimization, and direct and indirect effects of COVID-19 on the quality/treatment of water and residues); (ii) air (air pollution in the urban environment, outdoor and indoor air pollution, traffic and industrial pollution, strategies for reducing air emissions, modeling of the dispersion of atmospheric pollutants, indoor air treatment, effects of lockdown for COVID-19 in urban and rural environments, and influence of air pollutants in COVID-19 spread); (iii) waste (solid and aqueous waste characterization, waste collection and treatment, recycling, material reuse, energy recovery, direct and indirect effects of COVID-19 on solid waste quality, and feasible disposal options).

In total, seven works (five research papers and two review articles) have been collected in this Special Issue. The main topics covered by the published works are: alternative materials for pollutants adsorption, alternatives of industrial waste reuse, life cycle assessment (LCA), industrial wastewater treatment, and circular economy.

## 2. Contributions

Regarding research articles, five contributions were published.

Vargas-Terranova et al. [1] reported the implementation of a model for the management of reusable solid waste in two Colombian municipalities (Arbeláez and Tibasosa) in according to a circular economy approach.

Vaccari et al. [2] presented the results of a survey on full-scale membrane biological reactors (MBRs) in wastewater treatment plants (WWTPs) in Italy, highlighting the advantages and drawbacks of full-scale applications.

Li et al. [3] studied the removal of methylene blue using metal oxides supported by oily sludge pyrolysis residues. They tested AC-CuO, AC-ZnO, and AC-$TiO_2$ prepared using oily sludge pyrolysis residue-loaded CuO, ZnO, and $TiO_2$ as composite materials for pollutant remediation.

De Colle et al. [4] analysed the neutralizing capacity of different slags related to their mineral compositions to promote their use as alternative materials for the treatment of acidic wastewaters.

Bianco et al. [5] compared the LCAs of different scenarios for the treatment of end-of-life tyres to evaluate the environmental benefits of material and energy recovery. Specifically,



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they compared the recycling for the composition of bituminous mixtures with the energy recovery in a dedicated incinerator.

Regardubg review articles, two contributions were published.

Cioli et al. [6] analyzed the chemical characteristics of waste foundry sands and the results of leaching tests carried out in the laboratory. Moreover, they also reported on the environmental standards adopted in the guidelines of several different countries.

Collivignarelli et al. [7] reviewed the literature about the possible application of rice industry by-products as alternative adsorbent materials for the removal of fluoride and arsenic from contaminated drinking water.

More in-depth research in the field of water, air, and waste management and treatment are needed to address the main global problems that we are currently facing.

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