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## Post-Global Pandemic Challenges and improvements in advanced detection and removal processes of toxic pollutants: Editorial

### GRAPHICAL ABSTRACT



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### ABSTRACT

Every two years, the Pollutant Toxic Ions and Molecules Conference, PTIM, meets the environmentalist, biologist, chemists and health researchers in Costa de Caparica, Portugal, to showcase the latest technologies, methodologies and research advances in pollution detection, contamination control, remediation, and related health issues, as well as policy implications.

We are living on a Green Planet with multiple equilibria. Modifications on any of them drastically affect the entire globe. Humanity is confronted with a hazardous health situation induced by a virus, the SARS-CoV-2. This RNA nanocage is devastating to human lives on the five continents. The world was forced to stop for months, producing healthy benefits such as cleaner air, reduced gas emissions (e.g. CO<sub>2</sub>), and a break for wildlife in our lands, rivers, and oceans. These Effects brought us astounding images of a more prosperous planet. Many questions have already risen during and will further arise after this pandemic time.

Are these effects maintained for an extended period? How long have

we to improve new methodologies for detection, quantification and recovery from the new pollutants? How will we develop the necessary control over our water, food, land, and air? Untreated wastewaters and solid residues from industries, hospitals, and households still result in the discharge of toxic pollutants to the environment and can affect our health. Eating wildlife animal products increases the risk of chaos and new diseases and zoonoses. We need to rethink and improve the oldest methodologies based on advanced oxidation processes, heterogeneous photocatalysis, application of nanomaterials, and new cost-effective and stable methods to provide safety again to our lives and the environment.

The main idea to organize this special issue entitled "Post-Global

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Pandemic Challenges and Improvements in Advanced Detection and Removal Processes of Toxic Pollutants” started during the last PTIM Edition in 2021, held from 1st to 4th November 2021. This conference was a continuation of the successful previous editions from 2015 in Costa de Caparica.

We decided during the last editions that all efforts should be aimed at developing new recovery and clean processes to restore the natural equilibria on our planet. Soil, Land, Water and Air are essential pieces to effectively control of our world.

This Special issue shows studies related to copper (Belbachir et al., 2022; Stala et al., 2022), mercury (Windisch et al., 2022), arsenic (Jacukowicz-Sobala et al., 2022; Zaric et al., 2022; Carneiro et al., 2022), selenium (Parra-Martínez et al., 2022; Arias Borrego et al., 2022), and other heavy and radioactive metals (Irfan et al., 2022; Zeng et al., 2022; Germande et al., 2022; Krawczyk-Barsch et al., 2022) detection and speciation, organic matter and inorganic ions removal (Pidoux, . et al., 2022), quantitative analysis of metabolites (Wang et al., 2022), estrogens (Zdarta et al., 2022), uses and detection of nanomaterials (Kuo et al., 2022; Saravanakumar et al., 2022), nanoplastics (Arini et al., 2022), HCH derivatives (Alvarez et al., 2022), antibiotics (Zaheer Afzal et al., 2022), pesticides (Jevremovic et al., 2022), photodegradation processes (Kumar et al., 2022), cell internalization drugs (Ahmadi et al., 2022), dyes and pigments degradation (Jankowska et al., 2022), and bacteria studies (Arruda et al., 2022; Xiang et al., 2022) in a very long different group of samples, including fresh environmental water, seawater, wastewater, different soils, food, marine organism, bacteria, mice's, etc. Solutions to the pressing problems facing humanity will involve not only technical data, experiments, and technologies, as well as changes in the attitudes of the public. It will require changes in public policy that must be backed up by sound science and solutions. PTIM is aimed at both providing technical data and technologies, as well as public policy to advance the goal of improving the environment round us.

The guest editors thank all outstanding contributions, including researchers from Austria, Algeria, Argentina, Australia, Belgium, Canada, China, Croatia, Denmark, France, Germany, India, Malaysia, The Netherlands, Pakistan, Poland, Portugal, Republic of Korea, Russia, Serbia, South Africa, Slovenia, Spain, US and the UK for the 32 research paper included. We sincerely hope that this VSI may be helpful to researchers in the next generation in their different career stages to continue improving the human understanding of the intricate processes of monitoring the mobility, bioavailability, toxicity and degradation of various inorganic and organic contaminants.

#### CRedit authorship contribution statement

All authors have contributed with writing, reading and correction of the editorial.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Data availability

No data was used for the research described in the article.

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