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# Editorial: Migration and transformation rules, evaluation and remediation methods of pollutants in “water-soil-plants”

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## Editorial on the Research Topic

### Migration and transformation rules, evaluation and remediation methods of pollutants in “water-soil-plants”

Industrial and mining pollution is a global environmental concern. Environmental issues such as air pollution, loss of biodiversity, and contamination of soil and surface/groundwater caused by industrial and mining pollution have received widespread attention (Dey et al., 2023). Therefore, it is important to find appropriate ways to tackle these environmental issues and minimize the health risks to local communities. However, the investigation, evaluation, and remediation of industrial and mining pollution are still lacking or are at the initial stage (Jiang et al., 2023).

Irrigated agriculture is widely used to increase the productivity of crops in arid regions around industrial and mining-polluted areas (Saravanan et al., 2023). The current research mainly focuses on water quality investigation, risk assessment, and pollution remediation (Wang et al., 2023). However, contaminated water produced in industrial and mining-polluted areas, which is used for irrigation, is a widespread phenomenon (Wang et al., 2021). Consistent conclusions have not been obtained in research to solve this issue.

This Research Topic aimed to collect articles suitable to improve our understanding of the migration and transformation characteristics (or mechanism) of industrial/mining pollutants, the risk assessment of these pollutants, theoretical remediation methods, and the improvement of remediation technologies.

Four articles are presented on this Research Topic. Zhang et al. focused on the “Effects of soil grain size and solution chemistry on the transport of biochar nanoparticles”. This study found that the migration behavior of biochar nanoparticles in the soil is affected by multiple factors such as soil particle size, environmental solution chemistry, and natural organic matter content.

He et al. optimized the method for the preparation of activated carbon by microwave heating through the response surface methodology. The authors demonstrated that activated carbon with excellent performance was obtained at the conditions of 550.62 W, 9.26 min, -0.05 Mpa, and 1.7 IR with responses of 37.57% yield and 933.38 mg/g iodine number.

Hussain et al. prepared the flocculant particles with modified coal fly ash using the NaOH-HCl-NaOH method to remove heavy metals in industrial wastewater. The results showed that the maximum removal efficiency of Mn<sup>2+</sup>, Cu<sup>2+</sup>, Ni<sup>2+</sup>, and Pb<sup>2+</sup> reached 94.26%, 95.88%, 71.04%, and 99.91%, respectively.

Zhang and Li investigated the stability of Pb and Cd in the soil at an abandoned Pb/Zn mine site after landscape restoration by 5-year monitoring. The results showed that the distribution of metals was significantly affected by soil organic matter and pH.

This Research Topic broadens the insight into the transformation law and risk assessment of industrial and mining pollutants. We believe that the hotspots in this field in the future are mainly concentrated in the following aspects. Firstly, the profound impact of pollutant transmitted to humans through the water-soil plant system on society, economy, environment, and population. Secondly, research on new technologies for controlling the source of toxic and emerging pollutants, especially tailored prevention and control measures and mechanisms. Thirdly, the impact mechanism and response mechanism of toxic and emerging pollutants on plant quality and food safety.

## Author contributions

TL: Funding acquisition, Writing–original draft, Writing–review and editing. LP: Formal Analysis, Project administration, Supervision, Writing–review and editing. LW: Conceptualization, Formal Analysis, Software, Supervision, Writing–original draft. WQ: Methodology, Writing–review and editing. All authors contributed to the article and approved the submitted version.

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The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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