Scientifica

Special Issue on
Models and Methods for Ecological Risk Assessment of Contaminated Water, Groundwater, and Soil

CALL FOR PAPERS

Both Exposure Assessment and Risk Characterization steps of the Ecological Risk Assessment (ERA) and Human Health Risk Assessment (HHRA) procedures use models and methods under continuous development. ERA in particular deals with millions of species rather than only one, and for this reason ERA needs an extreme use of simplification of reality, as the models adopted to describe exposure pathways and evaluate PECs as the use of new approaches for the definition of toxicological endpoints, the choice of the correct spatial and temporal scales, and the evaluation of PNECs and their assessment factors.

Sometimes, even if a source of contamination exists and the main possible pathways are identified and modelled, some contaminants do not seem to reach the points of contact, or on the contrary a high risk emerges at the end of the Ecological Risk Assessment procedure due to pollutants whose concentration at the source was very low. In these particular situations researchers and experts could encounter difficulty to support the validity of their results to population and politicians and in environmental forensics.

With reference to water, groundwater, and soil contamination, different models and methods are requested in the main passages of the Exposure Assessment step of the ERA procedure. They are adopted for characterizing the source of contamination, describing the transport mechanisms with which contaminants move in the different environmental matrixes and through them, and identifying the point where living beings come in contact with the pollutants.

Also alternative methods and approaches are proposed by EU and US EPA for the Risk Characterization step of polluted water, groundwater, and soil, as single-point (PEC/PNEC ratio) or multipoint estimate, stressor-response curves, and statistically based estimates.

The aim and scope of this special issue are to attract works where new insights for ERA are proposed. Papers on the comparison between simplified modelling approaches (analytical approximated or surrogate) and statistical methods to treat and reduce uncertainty, also by using remote sensing data, are encouraged. Research works on methods for PNECs evaluation (by classic assessment factor approach or by statistical methods) and alternative approaches to PEC/PNEC ratio to evaluate risk are very appreciated and papers on synergistic effects of chemicals and where evidence of risk is apparently difficult to explain are particularly welcome.

Potential topics include but are not limited to the following:

- ▶ Characterizing and modelling the sources of contamination
- ▶ Simplified and surrogated fate and transport models for soil/groundwater contamination (with dispersion, absorption, and adsorption)
- ▶ Continuous and distributed ecohydrological models
- ▶ PNEC evaluation by statistical methods (using chronic or acute ecotoxicity data)
- ▶ Assessment factors in PNEC evaluation using chronic or acute ecotoxicity single-species data, Species Sensitivity Distribution (SSD) multispecies data, field data, or ecosystems modelling data
- ▶ Remote sensing for monitoring and evaluating the ecological damage
- ▶ Ecological Risk Assessment during flooding and Natech (technical disasters triggered by natural events)
- ▶ Synergistic effects of PAH, Heavy metals, DNAPL, NAPL, pesticides, and emerging contaminants

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/scientifica/ecology/mmepe/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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