

PHD OFFER

Assessment of indicators to qualify functionality and ecotoxicology of contaminated soil under regeneration

réf. : Ineris - 216996] - ID 2726173

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Location: Verneuil-en-Halatte (60) - 40 minutes from Paris by train + shuttle

Type of contrat: PhD

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In urban areas, many communities face situations of soil pollution. They can then be led to think about new uses for these soils, in line with their budgetary, environmental and societal constraints and commitments. Recent laws and financing tools encourage them to protect, restore and use soils in a sustainable way and to rehabilitate polluted soils for other uses, such as nature spaces in cities. Still little used, ecological rehabilitation techniques based on the use of plant species allow to manage polluted land in situ, to preserve the soil resource and provide other benefits related to the presence of vegetation cover and soil functions. Many species can grow on soils polluted by trace metal elements and contribute to nature objectives in cities. Emerging on the market for the decontamination and management of polluted sites and soils (SSP), the use of plant cover instead of conventional techniques (excavation, containment) has benefits and possible negative effects. Both are poorly documented due to lack of feedback and field initiatives. The objective of the proposed thesis will be to evaluate, in terms of ecological gains, the management implemented on two urban sites contaminated by metal elements, going beyond the chemical approach classically conducted in the national SSP methodology. For this, various physico-chemical, biological (notably indicators of soil functioning) and ecotoxicological parameters will be measured and will help characterize the quality and health of the soil in relation to several plant covers, and the quality and health of the latter. In addition, 2 assessment and decision support tools will be tested on the 2 sites, the first to assess the risk to ecosystems (i.e. standard TRIADE approach), the second to give to site manager relevant indicators for monitoring ecological rehabilitation (RECORD tool). Their relevance will be assessed in the specific context of the ecological rehabilitation of sites with residual pollution of metal trace elements.

PROFILE

Master's degree connected to environmental sciences.

Skills / Knowledge

The candidate should:

- hold or in the process of obtaining a Master's degree or diploma allowing enrollment in a Doctoral School on October 1, 2023;
- have a good level course, a minimum grade of 12/20 is required (provide transcripts of Master's or equivalent);
- have skills in plant biology, soil sciences, analytical chemistry and statistics (eg mastery of R software; ACP, ANOVA). Knowledge on polluted sites and soils (SSP) would be a plus;
- have a taste for the field, the laboratory and teamwork.
- be autonomous, rigorous, organized and have good analytical and synthesis skills;
- be fluent in French and English.

OTHERS

Duration : 3 years

This position is open to people with disabilities.