Special Sessions

SpS 6. Advanced approaches and tools in risk assessment of contaminated sites

Organizers:
- Prof. Renato Baciocchi (University of Rome “Tor Vergata”, ReconNet[3])
- Prof. Ravi Naidu (University of South Australia, CRC-CARE[2])
- Dr. Laura D’Aprile (ISPRA, Institute for Environmental Protection and Research, ReconNet[3])

Risk assessment of contaminated sites is usually based on the ASTM-RBCA tiered approach.
Namely, Tier 1, aimed to define contaminants’ screening levels, is applied using site-generic input values and considering only on-site receptors, whereas transport of contaminants is described through simple analytical models. Tier 2, aimed to define the Site-Specific target levels (SSTL), include also off-site receptors and is performed using site-specific input data. Finally, in Tier 3, modeling of transport is performed using more complex numerical models, taking in account also the time evolution of contamination and accounting for the site heterogeneity. Typically, risk assessment is performed making reference to the tier 2 aporoach, which is based on a set of simplifying assumptions, such as: contamination source at constant concentration, no biodegradation, steady state solution of transport equations. Besides, the RBCA approach is based on a simplified description of the mechanism leading to contaminants’ assumption by potentially exposed receptors. This leads to considering that the contaminants intake equals the uptake, thus assuming 100% bioavailability. All the above simplifying assumptions typically lead to an overestimation of risks and of course to an underestimation of the calculated clean-up goals, thus possibly driving to a not cost-effective remediation of a contaminated site.

This special session is aimed to discuss the possible modification of current risk assessment
practice in order to get a more realistic evaluation of actual risks for potentially exposed receptors and of clean-up goals. To this aim, the following topics will be discussed:
- Current standard and legislation approaches at international level;
- New software tools for risk assessment;
- Critical migration pathways affecting risk assessment;
- Bioavailability issues.

A roundtable discussion will follow a set of presentations on these topics.

[2] Australian competence research center for contamination assessment and remediation of the environment
[3] Italian network on the management and remediation of contaminated sites