

Excavation and in situ/on site technologies: drivers for the choice (a two decades story in Europe)

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Once upon a time (early 90s of the past century) I started my field experience with a dissertation about an oil refinery in situ remediation (the first in Italy). Most professors were skeptical about a dissertation for excavating and pumping some water and it took some time to convince them about the new “science fiction” in situ technologies. Soil Vapour Extraction, Air Sparging and Free Product Recovery Systems were unknown and all the equipment had to be imported directly from the USA. Also regulators had to be educated to this new science but this was a more challenging issue.

The technology evolution observed in several European Countries is more or less the same: traditional activities such as Dig&Dump and Pump&Treat have been slowly replaced by in situ technologies. Currently in Europe we have different evolution stages: in countries with a short “remediation history” (i.e. Spain, Portugal, some German landers) we are still digging and pumping while in more evolved ones (i.e. UK, Benelux, France) in situ is widely accepted and we are now moving to integrated technology trains.

This presentation will include the criteria for the technology selection and the drivers that pushed from Dig&Dump to more innovative technologies.

In particular we will describe in-situ (physical, chemical, biological), on-site (excavation, treatment, reuse) and off-site (excavation, transport and disposal/treatment/reuse) technologies classes with their advantages and limitations with some case studies to provide the conceptual tools for the technology selection and for the remediation design.

Sustainability criteria according to the SURF (SUstainability Remediation Forum – UK) definition will be provided along with indications for the major footprints (carbon, water, land) for each technology class.