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Centre d'excellence de Montréal  
en réhabilitation de sites

**MCEBR**

Montréal Centre of Excellence  
in Brownfields Rehabilitation

# ***Metals in soils and groundwater Discussion***

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*Institut de  
recherche en  
biotechnologie*



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# Soil contamination

- Heavy metals
    - mining sites
    - brownfields sites
      - historic fill materials (Pb, Zn, Cd, As)
      - bound to matrix or new mineral complex
      - bioavailability
      - standard digestion methods vs leaching
  - Hydrocarbons
    - long chain hydrocarbons
    - PAH's, PCP's
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## Technical issues

- Site characterization:
    - Soils versus historic fill (industrial residues)
  - Analytical procedures
    - Acid digestion; total versus mobile or bio-available metals
    - Leaching tests
  - Residual levels of metals after remediation
    - Performance issue of remediation technologies
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**INSPEC-SOL Inc.**

*Phytoremediation of mixed contaminants  
PAH's and metals*





## Fractions

### Metal speciation – Bio-availability

	A	B	C	D+E
<b>Copper</b> :	<b>0 %</b>	<b>12 %</b>	<b>27 %</b>	<b>61 %</b>
<b>Lead</b> :	<b>0 %</b>	<b>22 %</b>	<b>39 %</b>	<b>39 %</b>
<b>Zinc</b> :	<b>0 %</b>	<b>16 %</b>	<b>47 %</b>	<b>37 %</b>
	Bioavailable		Potentially Bioavailable	Not Bioavailable

*limiting factor !*

