Italy country presentation
F. Quercia

NATO/CCMS Pilot Study
Prevention and Remediation in Selected Industrial Sectors:
Rehabilitation of Old Landfills
Legislative framework

• D.M. 185/89 - Regional Remediation Plans: inventory includes now over 12,000 potentially contaminated sites
• D.Lg.vo 22/97 - Waste Act (Decreto Ronchi)
• D.M. 471/99 - Technical regulation for cleanup of contaminated sites
• L. 426/98, L.388/00, L. 468/01, L. 179/02: the National Remediation Plan includes now 50 Sites of National Interest
Contaminated sites progress

Regional plans

Remediation status of contaminated sites in Italy

Characterization study

Assessment in progress

Remediated

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2004
Contaminated sites progress

Regional plans

Contamination status in Italy

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Remediation progress at 430 contaminated sites
Regions - Piemonte

soil treatment technologies

- Excavation and landfill disposal
- Landfarming
- Biopile
- Natural Attenuation
- Thermal treatment
- Bioventing / SVE
- O.R.C.
- Capping
- Chemico-physical inertization

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Regions - Piemonte

groundwater treatment technologies

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Sites of National Interest
care of Ministry for the Environment

• 50 sites identified so far
• Surface of 4 sites alone is 702,522 ha
  (land/sea/surface water) > 2 % area of national territory
• Costs estimated (over 41 sites): 3,149.30 M €
• Government Funds (over 41 sites): 547.34 M €
  (17.4% of estimated requirement)
• Several investigation and emergency safety actions projects have been authorized together with few remediation projects
Geographical distribution - Sites of National Interest
Sites of National Interest

areas of sites

Largest sites

Sulcis Iglesiente Guspinese
442,573 ha

Lit. Domizio Flegreo
163,887 ha

Casal Monferrato
73,834 ha

Cengio e Saliceto
22,228 ha
# Sites of National Interest

sites of surface water interest

<table>
<thead>
<tr>
<th>Location</th>
<th>Water Area (ha)</th>
<th>% of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulcis Igles. Guspinense</td>
<td>88,441</td>
<td>(20%)</td>
</tr>
<tr>
<td>Pieve Vergonte</td>
<td>10,525</td>
<td>(70%)</td>
</tr>
<tr>
<td>Priolo</td>
<td>10,085</td>
<td>(75%)</td>
</tr>
<tr>
<td>Taranto</td>
<td>6,991</td>
<td>(60%)</td>
</tr>
<tr>
<td>Grado e Marano</td>
<td>6,831</td>
<td>(60%)</td>
</tr>
<tr>
<td>Brindisi</td>
<td>5,590</td>
<td>(50%)</td>
</tr>
<tr>
<td>Porto Torres</td>
<td>2,741</td>
<td>(60%)</td>
</tr>
</tbody>
</table>
Sites of National Interest

Government Funds

Largest subventions:

- Porto Marghera 72.92 M €
- Cengio e Saliceto 41.32 M €
- Sulcis Iglesiente 32.85 M €
- Napoli Orientale 27.68 M €
- Priolo 23.65 M €

Total over 41 sites: 547.34 M €

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Sites of National Interest

Activity type

Activity type

- Chemical: 16%
- Petrochemical: 8%
- Smelters: 4%
- Asbestos: 10%
- Mining: 10%
- Landfill: 2%
- Other: 48%

- North
- Center
- South
- Islands

2004
Sites of National Interest

Activity type

Site complexity - presence of more plants and/or activity categories

- simple: 58%
- very complex: 12%
- medium complex: 8%
- less complex: 16%
- extremely complex: 6%

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Sites of National Interest

Contamination type

Contamination type

- Fuels: 38%
- NH VOCs: 18%
- H VOCs: 20%
- NH SVOCs: 24%
- H SVOCs: 12%
- Inorganics: 72%
- No data: 10%

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Sites of National Interest

Contamination type

Complexity of contamination - presence of more contaminant categories

- Simple: 45%
- Less complex: 24%
- Medium complex: 20%
- Complex: 7%
- Very complex: 4%
- Extremely complex: 2%

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Sites of National Interest

Remediation progress

Sites of national interest remediation status

- Formally identified but not yet delimited: 30%
- Delimitation of potential contaminated area: 12%
- Safety actions taken: 2%
- Characterization study: 2%
- Assessment in progress: 24%
- Remediation in progress: 30%

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Example of a National Interest Site
Acna di Cengio (chemical manufacture)

ACNA Cengio - indicators of the characterization study

- Boreholes: Public area 50, Private area 615
- Samples (soil): Public area 163, Private area 4001
- Samples (gw): Public area 80, Private area 340
- Samples (sw): Public area 24, Private area 213
- Analytes: Public area 213, Private area 213
Conclusions

• Much effort is dedicated to characterization and assessment of Sites of National Interest

• Remediation:
  – Few off-site soil treatment plants are available because present legislation limits off-site soil treatment and reuse
  – Excessive dig&dump/containment/no soil reuse are also a consequence of severe soil standards and legal restrictions and poor application of risk-based solutions
  – Groundwater remediation 60% is P&T; few PRB and NA cases

• Improving: participation in multinational research projects, education and professional expertise.