National activities on soil in Austria

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Legislation on soil protection

- No comprehensive federal law on soil protection in Austria
- Soil Protection Acts at regional level
- *Austrian Standard L 1075: Principles for the evaluation of the content of selected elements in soil*
- Ordinances on Sewage Sludge Application on agricultural land at regional level
- Federal Forest Act
- Soil Protection Protocol of Alpine Convention
- Forthcoming: EU Soil Thematic Strategy
Legislation on contaminated sites

- Federal Law for the Cleanup of Contaminated Sites (1989): legal basis for funding, registration and risk based management approach, only contamination at sites that existed before 1989
- Federal Water Act (1959) as basis for assessment and remediation – targets for GW protection
- Austrian Standards S 2088-1 to 3 (2004): Contaminated Sites - RA concerning impacts on soil, groundwater & air
- Forthcoming: EU Soil Thematic Strategy
Collection of soil information

- Agricultural soil taxation survey
- Agricultural soil management survey
- Forest soil inventory at national level
- Environmental soil inventories at regional level
- Permanent soil monitoring at national and regional level
- Special soil investigations at local level
- Soil investigations at field level
Permanent soil monitoring

Soil Monitoring Sites in Austria

- existing sites (by Federal Provinces)
- UN-ECE Integrated Monitoring site (by FEA)
- recommended sites (by Institute for Soil Science)
- existing forest sites UN-ECE ICP-Forest Programme (by F/R/C)

Source: Blum et al. in Soil Resources of Europe, 2005 (updated)
Soil Information System BORIS

The development of BORIS started in 1992. Currently the database holds over 1.5 Mio records from about 10,000 sites all over Austria.

BORIS contains over 600 soil-relevant parameters, which provide

- site information
- profile descriptions and
- analytical values.

http://www.umweltbundesamt.at/boris
Data Key Soil Science

- Available, heterogeneous data sets can be checked for their comparability
- Translation of soil data according to the codes of the ‘Data Key Soil Science’
- Integration into BORIS
- Evaluation of soil data beyond provincial borders
BORIS – Overview of available data set

Forest Soil Inventory of the Austrian Federal Office and Research Centre (514 sites)

Environmental Soil Inventories – Federal Provinces (5,462 sites)

Other about 30 special investigations (4,127 sites)
Assessment of potentially contaminated sites

- Register of suspected contaminated sites
- Site identification
- Site investigation
- Risk Assessment
- Site removed from register of suspected contaminated sites
- Site entered into register of contaminated sites
- Detailed investigation
- Priorisation for „action“
- Safeguarding/remediation measures and their assessment
- Monitoring
- Further monitoring
# Contaminated sites in Austria – facts

<table>
<thead>
<tr>
<th>Site category</th>
<th>Available information</th>
<th>*No. of Sites recorded to date</th>
<th>Type of site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered sites</td>
<td>Little, reference to former activities at the site</td>
<td>48.678</td>
<td>10% deposits 90% industrial</td>
</tr>
<tr>
<td>Suspected contaminated sites</td>
<td>Reference to site history</td>
<td>2.100</td>
<td>89% deposits 11% industrial</td>
</tr>
<tr>
<td>Contaminated sites</td>
<td>Reference to site investigation</td>
<td>238</td>
<td>49% deposits 51% industrial</td>
</tr>
</tbody>
</table>

*as of 1.1.2007*
Cadmium in grassland soils of Austria (within 0-10 cm) evaluated according to Austrian Standard L 1075:
0.5 mg Cd . kg⁻¹ soil

Data source: soil inventories of all provinces of Austria
Water conditions

Federal Research and Training Centre for Forests, Natural Hazards and Landscape
National Soil Indicators - Objectives

- Concept for development of national soil indicators
- Compilation of a national indicator set for comprehensive soil protection
- Support for policy consulting (regional, national, international)
- Contribution to higher efficiency of future soil investigations
Soil pollution – indicator example

Überschreitung der Richtwerte nach ÖNORM L 1075 (Basisraster)

Quelle: Daten der Bodenqualitätsinventar der Bundesländer und der Waldbodeninventar des BFS aus BCRIS
GfK-Bearbeitung: Ingrid Fodor, Februar 2006
## Building land and traffic areas

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<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Burgenland</td>
<td>264</td>
<td>277</td>
<td>282</td>
<td>289</td>
<td>25.5</td>
<td>10%</td>
<td>1.1</td>
<td>1.9</td>
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<tr>
<td>Carinthia</td>
<td>361</td>
<td>380</td>
<td>383</td>
<td>386</td>
<td>25.5</td>
<td>7%</td>
<td>1.1</td>
<td>1.0</td>
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<tr>
<td>Lower Austria</td>
<td>1147</td>
<td>1249</td>
<td>1261</td>
<td>1269</td>
<td>121.6</td>
<td>11%</td>
<td>5.6</td>
<td>2.2</td>
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<tr>
<td>Upper Austria</td>
<td>711</td>
<td>753</td>
<td>761</td>
<td>768</td>
<td>56.7</td>
<td>8%</td>
<td>2.6</td>
<td>2.0</td>
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<tr>
<td>Salzburg</td>
<td>216</td>
<td>226</td>
<td>228</td>
<td>229</td>
<td>13.4</td>
<td>6%</td>
<td>0.6</td>
<td>0.4</td>
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<tr>
<td>Styria</td>
<td>694</td>
<td>759</td>
<td>766</td>
<td>772</td>
<td>77.4</td>
<td>11%</td>
<td>3.5</td>
<td>1.7</td>
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<tr>
<td>Tyrol</td>
<td>270</td>
<td>284</td>
<td>288</td>
<td>290</td>
<td>20.1</td>
<td>7%</td>
<td>0.9</td>
<td>0.7</td>
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<tr>
<td>Vorarlberg</td>
<td>117</td>
<td>118</td>
<td>119</td>
<td>120</td>
<td>2.7</td>
<td>2%</td>
<td>0.1</td>
<td>0.2</td>
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<tr>
<td>Vienna</td>
<td>191</td>
<td>197</td>
<td>197</td>
<td>198</td>
<td>6.8</td>
<td>4%</td>
<td>0.3</td>
<td>0.1</td>
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<tr>
<td>Austria</td>
<td>3972</td>
<td>4242</td>
<td>4284</td>
<td>4321</td>
<td>349</td>
<td>9%</td>
<td>15.9</td>
<td>10.1</td>
</tr>
</tbody>
</table>
Soil Reporting

- National State of the Environment Report (every 3 years)
- Report on Contaminated Sites Management (annually)
- Regional Soil Information Reports of some federal provinces (1988-1999, few repetitions)
- Reports of specific investigations and assessments (project reports)
Conclusions on soil information

- **Cross linking of soil relevant data**
  Further development of interfaces of soil and soil relevant databases

- **Further soil investigations**
  Investigation of organic pollutants
  Repetition of soil inventories, further implementation of permanent soil monitoring to provide time series

- **Comparability of soil information**
  Good documentation of soil data
  Standardisation of data recording
  Transformation functions to convert different methods
  Soil information system has to be flexible
Targets of soil protection

- **Conservation** of the diversity of soils
- **Reduction of** land consumption to 2.5 ha/d until 2010
- **Sustainable use of the soil**, based on the conservation of ecological soil functions (e.g. good farming practises)
- **Reduction of risk for soil degradation** (e.g. measures against soil erosion and decline of organic matter)
- **Prevention of contamination** when applying materials on soils, definition of guidance values for organic pollutants
- Further **remediation** of contaminated sites and **redevelopment** of brownfields
- Enhanced **consideration of soil in spatial planning** (protective land management)
- Creation of **uniform framework** conditions and regulations for soil protection in relation to EU SFD
- **Increase awareness** on soil issues in the public.