

State of the Nation Report

Landfilling Practices and Regulation in Austria

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1. Summary of Solid Waste Management Sector

landfill class		number of landfills 2008
excavation residues		462
inert waste		13
non-hazardous waste (sustainable landfills)	construction waste	90
	incineration residue	40
	other pre-treated waste	46
other	not yet assigned	15
	total	666

Taken from: www.bundesabfallwirtschaftsplan.at (Band 1)

In the nine years from 1999 to 2008, total waste accumulation increased from 48.6 million tons to 56.3 million tons (+16%). Part of the increase can be explained by the higher generation of secondary waste due to increased waste treatment activities. Therefore, 2 million tons of the waste generated in 2008 can be allocated to secondary waste. The accumulation of excavated soils - by far the biggest waste fraction - increased from 20 to 25.6 million tons.

From 1999 to 2008, the accumulation of waste from households and similar establishments increased from 3.1 million tons in 1999 to **3.8 million tons** in 2008 (+22%). However, due to an increase in the separate collection of waste, residual household waste accumulation increased only by 5%.

Taken from:

http://www.umweltbundesamt.at/en/soer/soer2010_partc/soer2010_resources/soer2010_resources1/

landfill class		open landfill volume 2008 (in mio. m ³)
excavation residues		39,5
inert waste		1,8
non-hazardous waste (sustainable landfills)	construction waste	8,5
	incineration residue	12,5
	other pre-treated waste (MBA Material)	13,0
other	not yet assigned	2,0
	total	77,3

Web-site for any existing landfill inventories in the country

www.bundesabfallwirtschaftsplan.at (part 1)

www.edm.gv.at (not yet fully operational)

2. Overview of Landfill Practices

Waste scales for landfills of non-hazardous waste and inert wastes mandatory, Landfills for excavation residues (estimation, evaluation)

Base drainage for landfills of non-hazardous waste mandatory (filter layer, leachate drains, storage basin), treatment in sewage-plant

Waste compaction in layers common, eventually stabilization of incineration residue

Daily coverage state of the art

Geological barrier for landfills of non-hazardous waste

1. thickness 5m; k_f coefficient of permeability $< 10^{-7}$ m/s
2. thickness 3m; $k_f < 10^{-8}$ m/s
3. thickness 1m; $k_f < 10^{-9}$ m/s
4. thickness $\frac{1}{2}$ m; $k_f < 5 \times 10^{-10}$ m/s

if not present → Artificial barrier mandatory with equal security

thickness $> 0,5$ m; compaction in layers

- Site investigation (Austrian Standards Norm S 2074-1) → long term stability of bedrock
- Landfill raw formation for landfills of non-hazardous waste (follow appendix 3 of the Austrian landfill ordinance)
- Base sealing for landfills of inert and construction waste
 1. Two-part, mineral layer (20-27cm/layer), total > 50 cm
 2. alternate base sealing with equal security > 20 cm permitted
 3. longitudinal slope $> 2\%$, transverse slope $> 3\%$
- Base sealing for landfills of incineration residue and pre-treated waste
 1. Three-part, mineral layer (20-27cm/layer), total > 75 cm
 2. alternate base sealing with equal security > 40 cm permitted
 3. special design with equal security permitted, if side-slope $> 1:2$ (e.g. Viennese “Dichtwandkammersystem”)
 4. longitudinal slope $> 2\%$, transverse slope $> 3\%$
- Landfill surface coverage after operational phase (recultivation, erosion protection);
- Surface sealing for landfills of inert waste and non-hazardous waste (incl. surface water drainage) → Appendix 3 of the Landfill Ordinance
- Temporary surface sealing for landfills/compartments of highly biodegradable waste for at least 20 years
- Plan to intensify the biodegradation (e.g. aeration) latest 12 months after operational phase) → Appendix 3 of the Landfill Ordinance
- Gas collection mandatory
 1. Passive for pre-treated waste (e.g. gas flare, oxidation window)
 2. Active for highly biodegradable waste

3. Key Stakeholders in the solid waste disposal sector relating to Landfill

- Public and private landfill owners
- Environment Agency Austria (Umweltbundesamt)
- Austrian Ministry of Environment (Lebensministerium)
- Austrian Water and Waste Management association (OEWAV)
- Consultants

4. Legal and Policy Frameworks for Landfill

Abfallwirtschaftsgesetz 2002 (Waste Management Act 2002, Amendment 2011)
Deponieverordnung 2008 (Landfill Ordinance 2008)

Climate change position

Kyoto objectives - 13 percent less emissions compared to 1990

Austrian CDM/JI Program (Link: <http://www.ji-cdm-austria.at/en/portal/index.php>)

Policies or mandates that may affect waste streams

1992: Verordnung getrennte Sammlung biogener Abfälle (mandatory separate collection of biowaste)

1996: Verpackungsverordnung (separate collection of packaging waste)

1996: Deponieverordnung (mandatory pre-treatment of household waste prior to disposal from 2004)

2001: Kompostverordnung (End of waste criteria for biowaste)

2005: Elektroaltgeräteverordnung (separate collection of e-waste)

2011?: Baustoff-Recyclingverordnung (End of waste criteria for construction waste)

2011?: Recyclingholzverordnung (End of waste criteria for scrap wood)

5. Domestic Country Strategy

With the mandatory pre-treatment of household waste in 2004, a substantial shift from landfilling to thermal treatment (and MBA) took place. In 2009 the exceptional rule for the direct disposal of household waste in Tirol, Vienna and Carinthia expired. With the implementation of the new EU waste hierarchy (Novelle AWG 2010) and new regulations on end of waste, Austria is reaching for the goals of recycling according to the waste framework directive.

Waste Prevention: Apart from the reduction of landfilled waste (Austrian Waste Prevention Program 2011 – see www.bundesabfallwirtschaftsplan.at), the mandatory pre-treatment of household waste leads to the avoidance of water- and soil-polluting contaminated sites, the reduction of greenhouse gases, careful resource management, and is an investment into the environment for future generations.

Re-Use of waste – prior to its production – is another important section of the Austrian Waste Prevention Plan, which has set a medium-term goal to build up,

support and establish a re-use network in Austria.

Public Relations is the most important task when it comes to “waste separation”, in particular concerning plastic packaging. The website www.richtigsammeln.at (Collect correctly), established by the Ministry of Environment, offers further information on this subject. The main goals of public relation are also defined in the Austrian Waste Management Plan (www.bundesabfallwirtschaftsplan.at)

6. References and Sources

Austrian Waste Management Plan (www.bundesabfallwirtschaftsplan.at)

Environment Agency Austria (www.umweltbundesamt.at)

Austrian Ministry of Environment (www.umweltnet.at)

Austrian Water and Waste Management association (www.oewav.at)