Outline of Presentation

- Directive and it’s main provisions,
- Irish Law,
- Competent Authorities,
- Relevant Documentation

Make it interesting?
Directive 1999/31/EC on the Landfill of Waste

...............Main Provisions
Background

- 22 July 1991: Cion Proposal
- 6 Oct 1995: Council - Common Position
- 22 May 1996: European Par Rejects
- June 1996: New Proposal
- 5 March 1997: Cion adopted new Proposal
- 26 April 1999: Final adoption of the Directive
- 16 July 1999......2001
Art 1 - Objectives

- Prevent and reduce environmental effects from landfilling via strict provisions during setting up, operation, closure and aftercare of a landfill.
- Compliance with the hierarchy of waste management.
Art 2 - Definitions

- The Directive shall be applied to landfills as defined in Article 2(g)
  - 'Landfill' means a waste disposal site for the deposit of the waste onto or into land (i.e. underground), including:
    - internal disposal sites (waste disposal in place of production)
    - a permanent site (i.e. more than one year) which is used for temporary storage
Art 2 - Sites Excluded

- Excluded;
  - Facilities where waste is unloaded in order to permit its preparation for further transport for recovery, treatment or disposal elsewhere
  - Storage of waste prior to recovery or treatment for a period less than three years
  - Storage of waste prior to disposal for a period less than one year
Art 3 - Operations Excluded

- Spreading of sludges on soil for the purpose of fertilisation
- The use of inert waste for redevelopment/restoration or construction in landfills
- The deposit of non-hazardous dredging sludges alongside waterways
- The deposit of unpolluted soil, non-hazardous inert waste from mining and quarrying

*specific articles may not apply for landfills (<15kt/<1kt/y) on isolated island or in isolated settlements (Notification to Commission required)*
Art 4 - Classification

- Inert
  - Waste that does not undergo significant physical, chemical or biological transformation
  - Waste will not dissolve, burn, biodegrade or react
Art 4 - Classification

- Non Haz
  - Municipal waste
  - Waste not covered by paragraph (c) (Haz)

- Haz
  - Any waste covered by Article 1(4) of Directive 91/689/EEC on hazardous waste – listed showing the nature, constituents or properties listed in Annex I, II and III
Art 5 - Waste Not Accepted

- **Liquid** waste
- Waste which is: **explosive, corrosive, oxidizing, highly flammable** (defined in Annex III of Directive on haz. waste)
- **Hospital** and **clinical** waste from medical and veterinary establishments (defined as infections in Annex III of Directive on haz.waste)
- Whole **used tyres** (from July 2003) Shredded used tyres (from July 2006), excluding:
  - used as engineering material (only whole tyres)
  - bicycle tyres
  - tyres with outside diameter above 1400 mm

**Article 5(3):** "The dilution or mixture of waste solely in order to meet the waste acceptance criteria is prohibited."
Article 5

- **Biodegradable Waste**
  - "biodegradable waste" means any waste that is capable of undergoing anaerobic or aerobic decomposition, such as;
    - Food and garden waste and,
    - Paper and paperboard
Article 5

- develop national strategies for reduction using recycling, composting, biogas production and material/energy recovery
Art 5 - Biodegradable Targets

- 2006 – Reduce landfilling to 75% of BMW produced in 1995,

- 2009 – Reduce landfilling to 50% of BMW produced in 1995 and

- 2016 – Reduce landfilling to 35% of BMW produced in 1995
  - Ireland has taken the Art 5.2 derogation (2010 & 2013)
Challenging Targets

BMW Diversion Targets

- 0.6 m Tonnes (2004)
- 1.4 m Tonnes (2010)
- 1.7 m Tonnes (2013)
- 1.8 m Tonnes (2016)
Articles 5 & 6

- Pre-Treatment
  - All waste accepted at landfill subjected to pre-treatment
    - Binding from July 16\textsuperscript{th} 2001 for facilities commenced since that date
    - Binding from July 16\textsuperscript{th} 2009 for all facilities operational at time of transposition (2001)
Articles 5 & 6

- NB – Pre-Treatment may not apply;
  - Inert waste – not technically feasible
  - Any waste does not contribute to Objectives of Directive;
    - Reducing quantity of waste or
    - Hazards to human health/environment
Articles 7, 8 & 9

- Permitting
  - Applicant
  - Conditions
  - Content
  - IPPC
Art 10 – Cost Calculation

- Member States shall take measures to ensure that all costs involved in:
  - Setting up
  - Operation
  - Financial security (as far as possible)
  - Estimated costs of closure and after-care for a period of at least 30 years

are covered by landfill fees for disposal
Article 11 & 12

- Waste Acceptance Procedures
  - Annex II – WAC
    - Characterisation
    - Compliance testing
    - On-site verification

- Control and Monitoring in Operational Phase – Annex III
Art 13 – Closure and Aftercare

- Closure according to;
  - permit,
  - at request of operator
  - at decision of authority

- Operator responsible for maintenance, monitoring, control as long as required by authority

- **Monitoring – Annex III –**
  - Meteorological data
  - Emission data: groundwater, leachate, gas (volume, composition)
  - Topography of the site (structure and composition, settling behaviour)
Art 14 – Existing Landfill Sites

Permit granted or in operation at the time of transposition of the Directive,

- May not continue unless;
  - Operator presents conditioning plan
  - Competent authorities take definite decision whether operation can continue on the basis of the plan
  - In case of approval, authorisation of necessary work and setting of transitional period for completion

- ASAP & no later than 2009
Annex 1 - General Requirements

- Location
  - Distance to residential areas, recreational areas, waterways. Waterbodies, agricultural or urban sites
  - Existence of water or nature protection zones
  - Geological and hydrogeological conditions
  - Risk of flooding, subsidence, landslide or avalanches
  - Protection of nature or cultural patrimony
Annex 1 - General Requirements

- Water and Leachate Management
  - Control water from precipitation; prevent surface or ground water from entering the landfill body/waste, leachate collection

- Gas Control
  - Geological barrier, sealing system

- Protection of Soil and Groundwater
  - Geological barrier, Collect & treat
Annex 1 - General Requirements

- Nuisance and Hazards
  - Minimise odour, dust, noise, traffic, birds, vermin, insects, fires

- Stability
  - Place in a way to avoid slippage and settling

- Barrier
  - Prevent free access and establish system to detect illegal dumping
Council Decision (2003/33/EC) establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
Decision 2003/33/EC

- **Landfill for inert waste**
  - short list of acceptable inert wastes
  - specific leaching limit values
- **Landfill for non-hazardous waste**
  - municipal waste
  - gypsum waste, stable/non-reactive hazardous waste
  - specific leaching limit values
- **Landfill for hazardous waste**
  - specific leaching limit values
Decision 2003/33/EC

- Basic Characterisation
  - Type, composition, consistency, leachability etc.

- Compliance Testing
  - Periodical checks
  - Key Variables

- On site Verification
  - Visual Inspection/loads
Decision 2003/33/EC

- Acceptable without testing
  - Landfill for inert waste
    - Single waste streams – glass, brick
  - Landfill for non haz waste
    - Municipal waste
    - Separately collected fractions

- Pre-treatment
- Contamination
Decision 2003/33/EC

- Testing requirements
  - Granular Non Haz
  - Granular Haz
  - Non haz gypsum
    - Sulphur, H2S ?
- Granular V Monolithic??
- Sampling and Testing according to Methods listed in Annex III – Developed by CEN
Decision 2003/33/EC

- Safety Assessment for Underground Storage (Site Specific)
- Securely Separated from Mining Activities
  - Geological
  - Geomechanical
  - Hydrogeological
  - Geochemical
  - Biosphere Impact Assessment
  - “Long-term” Assessment
  - Surface Facilities
  - Other Risks?
Landfill TAC & WGs (Art 16/17)

- EU Technical Advisory Committee
  - Implementation Issues
    - WG on Monolithic Waste – Definition?
    - WG Landfill Gas Emissions
- Diversity of Interpretation
- Costs & Feasibility
- Representative Sampling
- Storage/Sampling
WASTE TO BE LANDFILLED (some treatment implied)

Is the waste hazardous?

No

Are the criteria for placement of non-reactive hazardous waste at landfill for non-hazardous waste met?

Yes

Are hazardous waste landfill criteria met?

No

Further treatment

Yes

Further treatment

Is the waste inert?

No

Is subclassification desired?

Yes

Is the waste inorganic with low organic content?

No

Further treatment

Yes

Is the waste inorganic with low organic content?

No

Is the waste mainly organic?

Yes

No, it is a mixture of organic and inorganic waste

B1a and B1b

Landfill for inert waste (*)

Subcategory for inorganic waste with low organic/biodegradable content (specific criteria may apply)

Landfill for non-hazardous waste (*)

Subcategory for predominantly organic waste. May be split into bioreactor landfill and landfill for pre-treated organic waste. Specific criteria may apply

Landfill for non-hazardous waste (*)

Subcategory for mixed MSW with a substantial content of both organic/biodegradable and inorganic waste (specific criteria may apply)

Hazardous waste landfill (*)

The waste may be unstabilised or stabilised/solidified

Underground storage site for hazardous waste (*)

A

B2

B3

C

DMAX(*)

(*) In principle, underground storage is also possible for inert and non-hazardous waste.
Legislation....Irish Law

- Landfill Directive 1999/31/EC
- Council Decision 2003/33 – WAC
  - S.I. 395 of 2004 (Consolidated)
Role of EPA

- CA
- Permitting/Licensing
- Guidance
  - Landfill Manuals
- Monitoring
- Inspection
The Irish Experience........
Traditional Waste Management

1995

- Few Regulatory Controls & Little Strategic Planning
- Poor Design and Operational Standards for Facilities
- Minimal Expenditure & Low Technology to Conserve Costs
- 88.9% BMW to Landfill
Key Policy

1998 - Changing Our Ways
2002 - Delivering Change
2004 - Taking Stock & Moving Forward
2006 - National Biodegradable Waste Strategy
2008 - “Brown Bin Circular”
2009 – EPA Guidance Pre-Treatment
2009 – Commercial Food Waste Regulations
Currently......

- Waste Management Enforcement
- Strategic Waste Management Planning
- Quality Waste Treatment, Recovery and Disposal Facilities
- Hugely Increased Waste Management Costs
- A lot Done..... a lot more to do
Waste Trends.....
Existing Recycling Centres (Civic Amenity Sites)

<table>
<thead>
<tr>
<th>Year</th>
<th>Recycling Rate (%)</th>
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<tbody>
<tr>
<td>1995</td>
<td>16.5%</td>
</tr>
<tr>
<td>2004</td>
<td>45.7%</td>
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<tr>
<td>2007</td>
<td>58.0%</td>
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</tbody>
</table>
Waste Stats – Headlines (2008 Data)

- Overall recovery – 38% - ↑ 1% (9% - 1998)
- Total MSW – 3.2M Tonnes – 0.73t per person (0.78t – 2007)
- Disposal Rate - 1% ↓
- Home Composting 7% ↑
- Organic Waste Collected x 2
Waste Trends....

Trends in recovery and disposal of municipal waste

Tons per annum

Year

Disposal Recovery

2001 2002 2003 2004 2005 2006 2007
Waste Trends.... (2)

Total household and commercial waste collected

Year

Million tonnes

Waste Trends.... (3)

Number of Landfills accepting municipal waste

<table>
<thead>
<tr>
<th>Year</th>
<th>No. Landfill sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>50</td>
</tr>
<tr>
<td>2002</td>
<td>40</td>
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<tr>
<td>2003</td>
<td>30</td>
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<td>2006</td>
<td>20</td>
</tr>
<tr>
<td>2007</td>
<td>20</td>
</tr>
</tbody>
</table>
Landfills - 2008

- 79 licensed
  - 37 operational
  - 31 closed
  - 11 – not commenced/activities ceased
People Pressure.....
Housing Stock

Trends in Housing Stock

Year

Housing Stock

New Houses built

1995 2004 2005

0 30000 60000 90000

1993 1995 1997 1999 2001 2003 2005

0 400 800 1200 1600 2000

0 2000 4000 6000 8000 10000 12000 14000 16000
Population Trends

Population Change

-40
-20
0
20
40
60
80
100
120
1987 1989 1991 1993 1995 1997 1999 2001 2003 2005
change in 000s
Population Trends (2)

Population Trend

Year

Million


Population

Year

Million

Landfill Remediation...
Landfill Remediation

- Exchequer funding for 2006-2008
- Remediation of licensed closed LA landfills
- 75% Funding
- Capital expenditure - Restoration and Aftercare Plan (EPA)
- 19 sites covered – 2006-2008
- €30m approx.
Historic legacy Landfills (1)

- Operated between 1977 and 1997
- Section 22 of WMA 1996-2008
  - Section 26 – Hazardous
- S.I. 524 of 2008 (Certification of Historic unlicenced Waste Disposal and Recovery Activity)
Historic legacy Landfills (2)

- Inventory and Risk Assessment
- EPA Code of Practice
- Tier 1, 2 & 3
- EPA - Register & GIS tool
- To date 345 sites
- Pilot Programmes (May 11th)
Future?

- Transposition of Waste Framework Directive
- New Government Policy
  - International Review?
  - Food Waste Regs?
  - Landfill Bans?
  - Levies?
Thank you for your attention......

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