Waste Classification and Management Regulations and supporting standards

Waste Classification System Workshop
Background

- Waste is currently classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (MRHW); 2nd Ed. 1998
- Developed in 1998 – when landfill was the predominant method of waste management
- MR – first guidance documents for the management of waste
  - Protection of water resources was the focus
  - Implemented through the landfill permit system
  - Classified waste into general and hazardous
  - Separate landfill for general waste and hazardous waste
  - Specified different liners for different landfills
  - Set different management measures for different landfill types
  - All waste is hazardous until proven otherwise
Minimum Requirements – criticism of the system

- Philosophy of MR does not support the principles of the waste hierarchy - classification of waste for landfill
- The current waste classification system is only based on leachable concentrations of the hazardous components in a waste - should also consider total concentration - encourages recycling & exposes potential risk
- The standard leaching concentration or acceptable risk limits for many species are too low – Mn is 0.3mg/l (based on mismanagement scenario) – over emphasis of environment risks of many large waste streams
- MR only allows for TCLP and Acid rain leaching procedure, TCLP for putrescible waste and the ARLP for inorganic waste - both are acid based – overly conservative for a mono disposal situation – e.g. slag
- MR is not legislated but enforced through permit conditions
Minimum Requirements – criticism of the system

- Origins of the ARLP is not referenced
- Total load promotes dilution - increases the disposal footprint
- Test methods are not specified – results are not comparable
- No requirement to document and keep records of classification
- The recording of waste disposed of to landfill is not auditable – condition merely indicates that a landfill can only accept certain waste types – based on word of the landfill owner
- Onus on Department to approve delisting
- Long term storage of waste in lagoons – no solution, air impacts, high risk
- System does not support reuse – waste managed through permit system – utilisation of waste requires a permit
Minimum Requirements – classification system

- Landfill bias will not promote the development of alternative technologies - landfill cheapest option
- Onus for classification on landfill operator; generator has little understanding of waste generated and makes no interventions to reduce waste volumes
- Allows for co-disposal of waste – sterilizes waste for recovery – and increases risk reactions between waste – excessive leaching
- Administrative discretion – industry could motivate
- MR allows for the delisting – treatment with lime and then disposal of hazardous waste to a general waste site – treatment is not always permanent
- Blending of wastes to reduce risk – increases waste stream and complicates treatment and sterilizes waste for reuse
Revised Waste Classification system – legal framework

- NEM:WA – Part 2, 7(1)(a) requires the Minister to set national norms & standards for the classification of waste
- Chapter 8, Part 1, 69(1) allows the Minister to make regulations regarding:
  - The categorisation of waste
  - The manner in which particular waste types must be dealt with and managed
  - Measures that are required for the environmentally sound management of waste
  - The utilisation of waste by way of recovery, reuse and recycling
  - Labelling requirements in respect of waste management
Revised Waste Classification system – Objectives

- The legislative framework for waste management is changing.
- The NEM:WA emphasises the management of waste in relation to the waste hierarchy.
- The Waste Classification System is a key tool to manage waste in relation to the waste hierarchy.
- Waste can be reused – a waste to one industry is an input for another and as a substitute product (slag as road building material).
- Waste can be recovered – energy (high calorific value) or raw material (mineral properties).
- A project to revise the Waste Classification and Management System was initiated in March 2009.
Revised Waste Classification system – Objectives & Process

• The revised system aims to address the following issues:
  • Separate waste classification from the management of waste
  • Move the emphasis of management to support the waste hierarchy
  • Divert waste from landfill and into utilisation where possible

• Drafting done in partnership with DWA i.t.o containment barriers

• Legal Services for input on drafting and legality

• Inputs from Government and Industry – providing their practical experience
Consultation process

- An extensive consultation process has been undertaken
- Process was advertised in the Sunday Papers and Business Day – request for registration
- Focus group meetings held over 3 days in May 2009 – Chemical & Metallurgical industry, NGOs, Waste Managers
- Inputs through the Technical Reference Group & General Stakeholder meetings
- 6 meetings held between March 2009 – June 2010 – first set of meetings included a specific provincial meeting, TRG, general stakeholder meeting
- Presented progress at each WGII meeting
- Requested the Institute of Waste Management to organise a meeting of its members - was held in 9th June 2010
Consultation process

- 2 day GHS training session held March 2010
- Stakeholder meeting requested for KZN – 30 July 2010
- Several focus group meetings held – BUSA, FAPA & GIGSA
- Special Municipal meeting held - September 2010
- Presented regulations at Wastecon – October 2010
- Presented the regulations at the NWMS road shows in all nine provinces between November – December 2010
- Regulations were published for comment – April 2011 with 45 day comment period
- Currently awareness raising being done – workshops in each province September – November
- The regulations and standards are being presented at the Municipal Managers training sessions
Draft Waste Classification and Management Regulations – drafted in terms of the NEM:WM Act
Waste Classification

• Classification according to GHS – SANS 10234
• Must classify waste within 90 days – no holder of waste may be in possession of unclassified waste after 90 days
• All waste other than pre-classified waste must be classified
• May not mix or dilute waste prior to classification
• Reclassify if change input material or process
• A safety data sheet must be prepared - accompany waste at all times
• Waste containers must be labelled identifying content & date of containerisation - within 2 months
• Waste must be treated, reused, recovered or disposed of within 18 months of generation
### General Waste
- Domestic waste;
- Uncontaminated Building and Demolition Waste;
- Business waste not containing hazardous waste
- Inert waste;
- Waste tyres;
- Garden waste
- Post consumer packaging
- Non-infectious animal carcasses
- Uncontaminated, excavated earth

### Hazardous Waste
- Health Care Risk Waste (HCRW);
- Asbestos Waste
- General waste, excluding domestic waste which contains hazardous waste or hazardous chemicals
- Mixed hazardous chemical waste from analytical laboratories and laboratories from academic institutions in containers less than 100 litres
Waste Classification

- Safety Data Sheet records the waste classification
- Waste Generator is required to keep records of the management of their waste – keep for 5 years
- Waste currently stored must be managed within 5 years
- Waste disposal – prior to disposal waste must be assessed for landfill management
- If waste is acceptable for disposal it must be disposed of in accordance with waste disposal standards
Waste Management Activities that do not require a licence

- Any person may motivate to the Minister to list a specific waste activity as an activity which does not require a licence.
- The activity must be able to be conducted consistently and repeatedly in a controlled manner without unacceptable impact to the environment or health.
- There is specific information required to be submitted to support the motivation – comprehensive assessment of possible impacts – once off.
- Conditions can be imposed or standards of operation set.
- The Minister may repeal the listing at any time should there be non-compliance.
- Implication is that whoever uses the waste identified does not require a licence to undertake the activity.
Record keeping

- Within 6 months
  - Waste generators must keep records of waste
    - Classification
    - Quantity of waste generated
    - Quantity of waste reused, recycled, recovered, treated or disposed of
  - Waste managers must keep records of waste managed
- A waste manifest must be maintained for hazardous waste
- Waste managers may not accept hazardous waste without a waste manifest
- Records must be kept for 5 years
Transitional arrangements

- Waste that has been classified i.t.o Minimum Requirements can retain that classification for 2 years
- Waste classified i.t.o Minimum Requirements does not have to be assessed i.t.o the standards for the assessment of waste for 2 years
- Waste classified i.t.o Minimum Requirements does not need to be assessed i.t.o the standards for disposal of waste to landfill for 2 years
- Requirement for use of accredited laboratories will be phased in over 2 years
Draft National Standard for the Assessment of Waste for Landfill Disposal
Standards for Assessment of Waste for Landfill Disposal

- Approach – in order to determine the risk level associated with the disposal of waste to landfill
  - Identify the chemical substances that could be in the waste
  - Sample and analyse to determine the total concentration and leachable concentration
  - TC to be determined for all possible substances in the waste
  - Analysis to be undertaken by accredited laboratory – 2 years grace if waste has been classified using MR
  - Analysis to be undertaken using national or international analytical methods
Standards for Assessment of Waste for Landfill Disposal

- LC determined using the Australian Standard Leaching Procedures - using accredited laboratories
- Three different leach solutions depending on the disposal method
  - Putrescible waste – use acetic acid solution
  - Waste to be disposed of with non-putrescible waste – use sodium tetraborate decahydrate solution & acetic acid solution (to be phased out)
  - Waste for mono-disposal – reagent water
- Compare the TC and LC with risk levels identified in a table assign a risk level for landfill - organic & inorganic
Standards for Assessment of Waste for Landfill Disposal

- Waste with any chemical substance with a LC > LCT2 or TC > TCT2 are Type 0 waste – very high risk waste – cannot be landfilled
- Waste with any chemical substance with a LCT1 < LC ≤ LCT2 or TCT1 < TC ≤ TCT2 are Type 1: High risk waste – Class A landfill (H:H or H:h)
- Waste with any chemical substance with LCT0 < LC ≤ LCT1 and TC ≤ TCT1 are Type 2: Moderate risk waste – Class B landfill (GLB+)
- Waste with chemical substances with a LCTi < LC < LCT0 are Type 3: low risk waste – Class C landfill (GMB+)
- Wastes with all TC < 20 x TCTi or LC ≤ LCTi and TC ≤ TCTi are Type 4: inert wastes – Class D landfill (GSB-)

<table>
<thead>
<tr>
<th>Chemical substance</th>
<th>LCTi Mg/l</th>
<th>TCTi Mg/kg</th>
<th>TCT0 Mg/l</th>
<th>TCT0 Mg/kg</th>
<th>LCT1 Mg/l</th>
<th>TCT1 Mg/kg</th>
<th>LCT2 Mg/l</th>
<th>TCT2 Mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>N/A</td>
<td>0.05</td>
<td>35</td>
<td>1150</td>
<td>70</td>
<td>1150</td>
<td>280</td>
<td>4600</td>
</tr>
</tbody>
</table>
• If particular contaminant is not listed, and the waste is classified as hazardous in terms of GHS health or environmental hazard, the waste is considered Type 1 Waste (so disposal to Class A landfill)

• If a representative sample of hazardous waste can’t be taken/obtained for proper LC & TC analysis (e.g. oily rags, PPE), then assume waste is Type 1.
**Waste Risk Level** | **Disposal Requirements**  
--- | ---  
**Type 0:** Very High Risk | Disposal **not allowed.** The waste must be treated first and then re-tested to determine the risk profile for disposal.  
**Type 1:** High Risk | Disposal only allowed at a landfill with a **Class A** or **Hh/HH** containment barrier design.  
**Type 2:** Moderate Risk | Disposal only allowed at a landfill with a **Class B** or **GLB+** containment barrier design (or Class A).  
**Type 3:** Low Risk | Disposal only allowed at a landfill with a **Class C** or **GLB+** containment barrier design (or Class B or A).  
**Type 4:** Inert Waste | Disposal allowed at a landfill with a **Class D** or **GSB-** containment barrier design.  
**Non-hazardous Waste (Pre-classified)** | Disposal only allowed at a landfill with a **Class B** or **G S/M/L B-/B+** containment barrier design.  

*Permitted landfills may accept wastes in any currently operating cells, but the design and operation of future cells must be upgraded to the new containment barrier designs.*
Draft National Standard for the Disposal of waste to Landfill
Landfill classes

- Currently landfill management systems – General and Hazardous Waste
- No longer managing waste in terms of General and hazardous landfills but rather risk based
  - Class A – High risk waste – H:H or H:h
  - Class B – Moderate risk waste – (GLB+)
  - Class C – Low risk waste – (GMB+)
  - Class D – inert waste – (GSB-)
Class A Containment Barrier Design

- Waste body
  - Geotextile
- 300 mm Stone leachate collection system
- 100 mm Protection layer of silty sand or a Geotextile of equivalent performance
- 2 mm HDPE Geomembrane
- 600 mm Compacted clay liner (in 4 × 150 mm layers)
- Geotextile layer
- 150 mm Leakage detection system of granular material or geosynthetic equivalent
- 100 mm Protection layer of silty sand or a Geotextile of equivalent performance
- 1.5 mm HDPE Geomembrane
- 200 mm Compacted clay liner
- 150 mm Base preparation layer
- In situ soil
Class B Containment Barrier Design

Waste body
Geotextile
150 mm Stone leachate collection system
100 mm Protection layer of silty sand or a Geotextile of equivalent performance
1,5 mm HDPE Geomembrane

600 mm Compacted clay liner (in 4 x 150 mm layers)

Under drainage and monitoring system and 150 mm Base preparation layer

In situ soil
Class C Containment Barrier Design

Waste body
300 mm thick finger drain of geotextile covered aggregate
100 mm Protection layer of silty sand or a geotextile of equivalent performance
1,5 mm thick HDPE geomembrane

300 mm clay liner (of 2 X 150 mm thick layers)

Under drainage and monitoring system in base preparation layer

In situ soil
Class D Containment Barrier Design

Waste body

150mm Base preparation layer

In situ soil
Standards for Disposal of Waste to Landfill

- In all containment barrier types certain approval and construction requirements apply
  - Design drawings approved by Regional Director DWA
  - Consider temperature effects on liners
  - Seepage shall be calculated in determining leakage rates
  - Alternative elements of approved equivalent performance may be considered
  - All drainage layers shall contain drainage pipes
Standards for Disposal of Waste to Landfill

- Alternative designs for slopes exceeding 1:4 can be considered
- Construction Quality Assurance is required on site
- Geosynthetic materials shall comply with SABS specifications
- Chemical compatibility testing of proposed clay components with wastes containing salt is required
- May continue to dispose of waste in cells designed to MR standards until cell is full then must change
- Containment barriers for new landfills as well as new working cells at existing landfills must be built according to new requirements
### Landfill Restrictions

<table>
<thead>
<tr>
<th>Waste Prohibited or Restricted in terms of Disposal</th>
<th>Compliance Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste which, in the conditions of a landfill, is explosive, corrosive, oxidizing, or flammable (according to SANS 10234).</td>
<td>Immediate</td>
</tr>
<tr>
<td>Waste with a pH value of &lt;6 or &gt;12.</td>
<td>Immediate</td>
</tr>
<tr>
<td>Reactive waste that may react with water, air, acids or components of the waste, or that could generate unacceptable amounts of toxic gases within the landfill.</td>
<td>Immediate</td>
</tr>
<tr>
<td>Waste compressed gases (according to SANS 10234).</td>
<td>Immediate</td>
</tr>
<tr>
<td>Untreated Healthcare Risk Waste (HCRW).</td>
<td>Immediate</td>
</tr>
<tr>
<td>(i) POPs pesticides listed under the Stockholm Convention.</td>
<td>Five (5) years</td>
</tr>
<tr>
<td>(ii) Residue pesticides and pesticide containers.</td>
<td>Three (3) years</td>
</tr>
<tr>
<td>Lead acid batteries.</td>
<td>Immediate</td>
</tr>
<tr>
<td>Other batteries</td>
<td>Eight (8) years</td>
</tr>
<tr>
<td>Reclaimable or recyclable used oil, as well as oil filters, but excluding other oil containing wastes.</td>
<td>Four (4) years</td>
</tr>
<tr>
<td>Reclaimable or recyclable used or spent solvents.</td>
<td>Five (5) years</td>
</tr>
<tr>
<td>PCB wastes (&gt;50 mg/kg or 50 ppm).</td>
<td>Five (5) years</td>
</tr>
<tr>
<td>Waste Electric and Electronic Equipment (WEEE) – Lights.</td>
<td>Three (3) years</td>
</tr>
<tr>
<td>Waste Electric and Electronic Equipment (WEEE) – Other.</td>
<td>Eight (8) years</td>
</tr>
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<th>Waste Prohibited or Restricted in terms of Disposal</th>
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<tr>
<td>Waste tyres: Whole.</td>
<td>Immediate</td>
</tr>
<tr>
<td>Waste tyres: Quartered.</td>
<td>Five (5) years</td>
</tr>
<tr>
<td>Liquid waste—</td>
<td>Five (5) years</td>
</tr>
<tr>
<td>Waste which has an angle of repose of less than 5 degrees, or becomes free-flowing at or below 60 °C or when it is transported, or is not generally capable of being picked up by a spade or shovel; or Waste with a moisture content of &gt;40% or that liberates moisture under pressure in landfill conditions, and which has not been stabilised by treatment.</td>
<td></td>
</tr>
<tr>
<td>Hazardous waste with a calorific value of:</td>
<td></td>
</tr>
<tr>
<td>&gt; 25 MJ/kg.</td>
<td>Four (4) years</td>
</tr>
<tr>
<td>&gt; 20 MJ/kg.</td>
<td>Six (6) years</td>
</tr>
<tr>
<td>&gt; 10 MJ/kg.</td>
<td>Eight (8) years</td>
</tr>
<tr>
<td>&gt; 6% TOC.</td>
<td>Ten (10) years</td>
</tr>
<tr>
<td>Brine or waste with a high salt content (TDS &gt; 5%), and an LC concentration for TDS of more than the LCT2 value prescribed for TDS.</td>
<td>Eight (8) years</td>
</tr>
<tr>
<td>Disposal of garden waste:</td>
<td></td>
</tr>
<tr>
<td>25% diversion from baseline.</td>
<td>Five (5) years</td>
</tr>
<tr>
<td>50% diversion from baseline.</td>
<td>Ten (10) years</td>
</tr>
<tr>
<td>Infectious animal carcasses and animal waste.</td>
<td>Immediate</td>
</tr>
<tr>
<td>Prohibited or Restricted Waste Disposal Activities</td>
<td>Timeframe</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Disposal of—</td>
<td></td>
</tr>
<tr>
<td>Type 0: Very High Risk waste that has been treated with Pre-classified non-hazardous waste;</td>
<td>Five (5)</td>
</tr>
<tr>
<td>Pre-classified non-hazardous waste with hazardous waste; and</td>
<td>years</td>
</tr>
<tr>
<td>Disposal of inert waste with any other waste.</td>
<td>Eight (8)</td>
</tr>
<tr>
<td>Macro encapsulation of waste.</td>
<td>years</td>
</tr>
</tbody>
</table>
Implications for Provinces

- Provinces issue waste management licences for general landfill sites:
  - Need to enforce the new containment barrier requirements through landfill licences
  - Need to enforce the landfill restrictions through amending acceptable waste types in the waste licences:
    - Inert landfill sites
    - Landfill diversions
- Landfill audit reports must be used to:
  - Enforce classification system
  - Enforce SDS
Implications for Local Government

- Local Government are owners of landfill sites – waste managers – domestic waste is pre-classified and is not hazardous
  - Must budget for new containment barrier requirements
  - Must develop inert landfill sites
  - Prepare cells for industrial waste
  - Must enforce the landfill restriction on LG landfill sites
  - Must plan for the diversion of garden waste
  - Will need to work with industry to ensure waste segregation to be able to achieve diversion targets – liquid waste, calorific waste
- Must take note of the requirements of reporting to the WIS – categorisation and against generator number
Implications for Local Government

- Will need to enforce manifest/SDS/classification system on landfill sites – may not accept unclassified waste or waste without manifest
THANK YOU FOR YOUR ATTENTION