

Guidelines to Facilitate Legal Compliance with  
Respect to Industrial Waste Management

**Volume 3:  
Auditing Waste Generators and Intermediate  
Waste Contractors to Assess and Monitor Legal  
Compliance: An Authority's Guide**

NL Oosthuizen & J Bell



	Comply	Don't comply
Contractor A		x
Contractor B	✓	
Contractor C	✓	x
Contractor D		



TT 397/09



Water Research Commission

**GUIDELINES TO FACILITATE  
LEGAL COMPLIANCE WITH RESPECT TO  
INDUSTRIAL WASTE MANAGEMENT**

**VOLUME 3:**

***AUDITING WASTE GENERATORS AND INTERMEDIATE  
WASTE CONTRACTORS TO ASSESS AND MONITOR  
LEGAL COMPLIANCE:  
AN AUTHORITY'S GUIDE***

Report to the  
**Water Research Commission**

by

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Understanding legal responsibilities with respect to waste management can be a daunting task. Compliance requirements pertaining to waste is contained in a wide array of legislation, across all tiers of government and administered by numerous government departments. Bad waste management practises can lead to high clean-up and rehabilitation costs in terms of Section 28 of the National Environmental Management Act (Act 73 of 1998) and Section 19 of the National Water Act (Act 36 of 1998).

This series of Guideline Documents sets out to provide waste generators, waste contractors and authorities with the necessary tools to assess waste practises by breaking down the complex requirements into simple and easy to understand language. By using these documents companies will also have the necessary knowledge to develop waste management plans that may be required in terms of future waste management legislation.

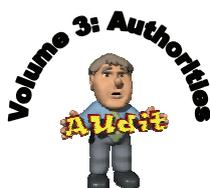
Separate Guideline Volumes deal with Waste Generators, Intermediate Waste Contractors and Authorities tasked with evaluating an organisation's compliance status. Some aspects of the guides are repeated such as the legal framework, but the content is amended to highlight the requirements specific to the target audience.



**VOLUME ONE:  
MANAGING YOUR WASTES TO ACHIEVE LEGAL  
COMPLIANCE: AN INDUSTRY GUIDE**



**VOLUME TWO:  
ACHIEVING LEGAL COMPLIANCE FOR INTERMEDIATE  
WASTE CONTRACTORS: A WASTE CONTRACTOR'S GUIDE**



**VOLUME THREE:  
AUDITING WASTE GENERATORS AND INTERMEDIATE  
WASTE CONTRACTORS TO ASSESS AND MONITOR LEGAL  
COMPLIANCE: AN AUTHORITY'S GUIDE**

## IMPORTANT NOTE

**These guideline documents were finalised before the promulgation of the National Environmental Management: Waste Act 59 of 2008 (NEM:WA). Version B39 of the National Environmental Management: Waste Bill of 2007 was used for the drafting of the guidelines. Please refer to the NEM:WA when reviewing licence requirements as Section 20 of the Environment Conservation Act 73 of 1989 is no longer applicable. It is also noted that the waste activities as listed under the EIA Regulations have been removed and listed waste activities are part of the NEM:WA**

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<b>ACKNOWLEDGEMENTS</b> .....	<b>iii</b>
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 PURPOSE OF THE GUIDE.....	1
1.2 FOR WHOM IS THE GUIDE INTENDED?.....	1
1.3 CASE STUDY: THE eTHEKWINI MUNICIPALITY .....	1
<b>CHAPTER TWO: THE WASTE GENERATOR AND THE INTERMEDIATE WASTE CONTRACTOR</b> .....	<b>2</b>
2.1 THE WASTE GENERATOR.....	3
2.2 THE INTERMEDIATE WASTE CONTRACTOR.....	3
2.3 MANAGEMENT SYSTEMS.....	5
<b>CHAPTER THREE: LEGAL FRAMEWORK</b> .....	<b>7</b>
3.1 WHAT ARE LEGAL REQUIREMENTS? .....	8
3.2 THE DEVELOPMENT OF LEGISLATION .....	8
3.3 LEGISLATION PERTAINING TO WASTE MANAGEMENT .....	11
3.3.1 THE CONSTITUTION OF SOUTH AFRICA, 108 OF 1996.....	11
3.3.2 THE WHITE PAPER ON INTEGRATED WASTE MANAGEMENT AND POLLUTION CONTROL OF 2000.....	11
3.3.3 THE NATIONAL WASTE MANAGEMENT STRATEGY (NWMS) .....	12
3.3.4 THE POLOKWANE DECLARATION 2001 .....	12
3.3.5 ENVIRONMENT CONSERVATION ACT 73 OF 1989 .....	12
3.3.6 NATIONAL ENVIRONMENTAL MANAGEMENT ACT 107 OF 1998.....	13
3.3.7 NATIONAL WATER ACT 36 OF 1998 (NWA).....	18
3.3.8 OCCUPATIONAL HEALTH AND SAFETY ACT 85 OF 1993.....	21
3.3.9 HAZARDOUS CHEMICAL SUBSTANCES REGULATIONS OF 1995 .....	21
3.3.10 ASBESTOS REGULATIONS OF 2001 .....	22
3.3.11 LEAD REGULATIONS OF 2001 .....	23
3.3.12 HAZARDOUS BIOLOGICAL AGENTS OF 2001 .....	23
3.3.13 HEALTH ACT 63 OF 1977 AND THE NATIONAL HEALTH ACT 61 OF 2003 .....	24
3.3.14 HAZARDOUS SUBSTANCES ACT 15 OF 1973 (HSA) .....	24
3.3.15 NATIONAL ROAD TRAFFIC ACT 93 OF 1996 (NRTA) .....	25
3.3.16 THE MINIMUM REQUIREMENTS SERIES OF DOCUMENTS.....	32
3.3.17 PROVINCIAL LEGISLATION – KWAZULU-NATAL .....	38
3.3.18 THE eTHEKWINI REFUSE REMOVAL BYLAWS MN 47 OF 2002 .....	38
3.3.19 THE eTHEKWINI SEWAGE DISPOSAL BYLAWS MN 27 OF 1999 .....	39
3.3.20 THE eTHEKWINI SCHEDULED TRADE AND OCCUPATIONS BYLAWS .....	
MN 134 OF 1979.....	40

3.3.21 THE NEW ETHEKWINI PERMITTING SYSTEM .....	40
3.3.22 THE INTERIM CODE RELATING TO FIRE PREVENTION AND FLAMMABLE LIQUIDS ..... AND SUBSTANCES PN 5417 OF 2000 .....	40
3.3.23 THE NATIONAL ENVIRONMENTAL WASTE MANAGEMENT BILL OF 2007 .....	41
<b>CHAPTER FOUR: AUDITING .....</b>	<b>49</b>
4.1 GENERAL .....	50
4.2 THE TYPES OF ENVIRONMENTAL AUDITS .....	50
4.3 THE AUDIT PROCESS.....	51
4.4 PRE-SITE ACTIVITIES.....	51
4.4.1 AUDIT SCOPE AND OBJECTIVES .....	51
4.4.2 AUDIT CRITERIA .....	52
4.4.3 PLANNING THE AUDIT .....	52
4.5 DO YOU ANNOUNCE THE AUDIT? .....	55
4.6 CONDUCTING THE AUDIT .....	56
4.7 POST-SITE ACTIVITIES.....	58
4.7.1 POST AUDIT REVIEW .....	58
4.7.2 AUDIT REPORT.....	59
4.7.3 AUDIT FOLLOW-UP.....	61
4.7.4 QUALITY ASSURANCE AND RECORD KEEPING.....	61
4.7.5 ASSESSMENT OF AUDIT PROCESS.....	61
4.8 SELECTION OF AUDITORS.....	61

## **ANNEXURES**

ANNEXURE ONE:	DWAF POLICY ON THE HANDLING AND DISPOSAL OF ASBESTOS AND ASBESTOS CONTAINING WASTE IN TERMS OF SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989)
ANNEXURE TWO:	DWAF POLICY ON THE INTERPRETATION OF THE DEFINITION OF DISPOSAL SITES WITH REGARD TO THE ISSUING OF PERMITS FOR WASTE INCINERATORS, WASTE MANAGEMENT FACILITIES AND OTHER ALTERNATIVE WASTE DISPOSAL TECHNOLOGIES AND RELATED GUIDELINES
ANNEXURE THREE:	DWAF POLICY ON THE PROCEDURE WITH REGARD TO THE ISSUING OF EXEMPTIONS UNDER SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989)
ANNEXURE FOUR:	WASTE GENERATOR – SAMPLE AUDIT CHECKLIST
ANNEXURE FIVE:	INTERMEDIATE WASTE CONTRACTOR - SAMPLE AUDIT CHECKLIST

**CHAPTER ONE: INTRODUCTION****1.1 PURPOSE OF THE GUIDE**

This guide has been developed to assist you as an official within a government department to assess and monitor legal compliance with respect to waste management issues in:

- industry and
- the intermediate waste contractor sector

The aim is to give you the necessary skills to audit these practises within individual companies.

The focus of the guide is on solid and liquid wastes discarded for recycling, treatment or landfilling, although some references are made to trade effluent and air emissions. It is important to remember that it is best practise to manage wastes holistically, so that the pollution is not transferred from one medium of the environment to another.

**1.2 FOR WHOM IS THE GUIDE INTENDED?**

This guide is designed for use by various authorities. Waste can have an impact on a number of media such as land, water and air. Evaluation of compliance with legislation pertaining to waste issues is also spread across a wide range of government departments and the guide can add value to any official who deals with waste related matters. It is important to understand that management of wastes starts with the waste generator and may pass through a number of steps and hands before finally reaching the disposal site. As an authority, it is therefore necessary to understand the requirements relating to the entire waste management chain, to ensure that appropriate monitoring and enforcement measures will ultimately lead to the conservation of resources, protection of the environment and the health and safety of the citizens of our country.

**1.3 CASE STUDY: THE ETHEKWINI MUNICIPALITY**

Whilst the guide is applicable to waste management in the national context, the eThekwin Municipality has been used as a case study to illustrate how local legislation has a bearing on waste management practises.

*If the companies that you are auditing are based in other areas, please make sure you find out the provincial requirements and local by-laws that may apply.*

**THIS GUIDE CAN BE USED TO:**

- ☑ Reference legal requirements.
- ☑ Understand why and how you should conduct audits.
- ☑ Equip you with the necessary tools, so that you can confidently carry out an audit at a waste generator or an intermediate waste contractor.
- ☑ Assist you to develop audit protocols and checklists for the auditing process.
- ☑ Provide guidance on audit reporting formats.

## CHAPTER TWO: THE WASTE GENERATOR AND THE INTERMEDIATE WASTE CONTRACTOR

## SUMMARY ROLES AND RESPONSIBILITIES

***The Waste Generator***

- Identify and classify wastes
- Separate wastes – hazardous and non-hazardous – use the designated containers for each type of waste
- Apply the waste hierarchy
- Obtain Material Safety Data Sheets or generate them for own products
- Inform Waste Contractors of the waste constituents and the associated hazards
- Make waste contractors aware of how to safely handle the waste and prevent exposure of their employees
- Prevent pollution and harm to people as a result of waste management activities
- Inform the authorities of any incidents involving hazardous wastes
- Ensure safe loading of hazardous wastes
- Ensure waste contractors' vehicles on-site are fit for use, clean and correctly placarded
- Ensure the drivers of hazardous waste vehicles have the correct drivers licence, other permits and documentation
- Ensure wastes are correctly and legally handled, stored, treated and landfilled
- Formalise the partnership with waste contractors in a contract detailing:
  - ✓ roles and responsibilities for the safe handling, storage, transport and disposal of the wastes
  - ✓ how to prevent and manage incidents
- Audit all role-players for compliance with legal and contractual requirements

***The Intermediate Waste Contractor***

- Ensure that client has had the hazardous wastes classified correctly
- Ensure wastes are handled, stored, transported, treated and disposed of correctly
- Avoid and minimise wastes in own operations
- Prevent pollution and harm to people as a result of waste management activities
- Inform employees and any sub-contractors of the waste constituents and the associated hazards
- Provide employees with the knowledge and equipment to safely handle the wastes
- Ensure the safe loading, transport and offloading of wastes
- Ensure the waste is disposed of to a legally compliant facility that is authorised to accept that waste stream
- Inform the authorities and clients of any incidents involving hazardous wastes
- Ensure necessary permits / authorisations / licences for your operations
- Ensure that compliance with the National Road Traffic Act and the NRTA Regulations with respect to the transport of hazardous wastes
- For any sub-contractors used, formalise the partnership in a contract detailing:
  - ✓ roles and responsibilities for the safe handling, storage, transport and disposal of the wastes
  - ✓ how to prevent and manage incidents
- Audit all role-players for compliance with legal and contractual requirements

## 2.1 THE WASTE GENERATOR

The waste generator referred to in this guide is any industry that generates wastes. These may include:

- General, non-hazardous wastes from the administration areas
- General, non-hazardous wastes from the company's process, for example metal from a workshop
- Hazardous wastes from the administration area, for example used batteries
- Hazardous waste from the company's process, for example heavy metal containing sludges from a metal finishing operation.

From a responsibility point of view, the waste generator must have systems in place to manage all wastes from the point of generation to final disposal. This will include:

- Minimising the impact of their wastes on health and safety and the environment by classifying, handling, storing, transporting and disposing/recycling correctly;
- Ensuring compliance with applicable legal requirements;
- Applying the waste hierarchy;
- Ensuring compliance of the contractors working on their site;
- Ensuring compliance of their waste service providers (recyclers, transporters, treatment and disposal facilities) in fulfilment of their Duty of Care responsibilities;
- Maintenance of Cradle-to-Grave documentation.

## 2.2 THE INTERMEDIATE WASTE CONTRACTOR

The *Intermediate Waste Contractor* is a contractor that may carry out any of the following activities:

- (1) The removal of effluent for disposal to a waste water treatment works such as the eThekweni Southern Works facility.
- (2) The removal and transportation of wastes to a:
  - landfill site
  - to a transfer facility

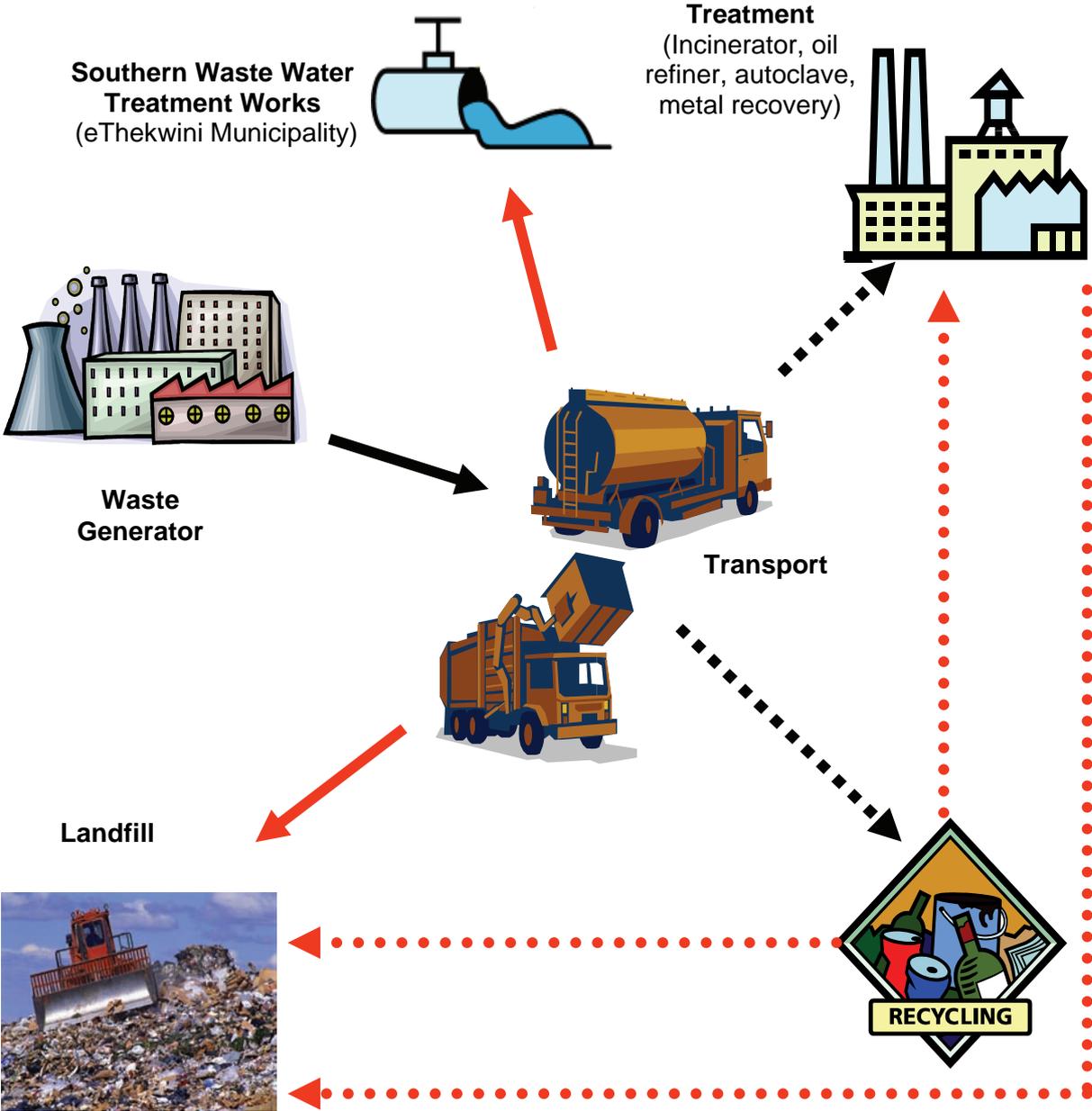
- to a treatment facility such as an oil refining plant or a where the facilities are neither owned nor operated by the contractor

(3) The removal and transportation of wastes to a transfer facility or premises owned and operated by the intermediate waste contractor where the wastes may be: sorted for recycling; stored for removal to a landfill once sufficient volume has been accumulated; or processed to reduce the volume and / or the toxicity of the wastes requiring disposal to landfill

From a responsibility point of view the intermediate waste contractor must have systems in place to manage all wastes removed from the generator in a legally compliant manner. This will include ensuring that:

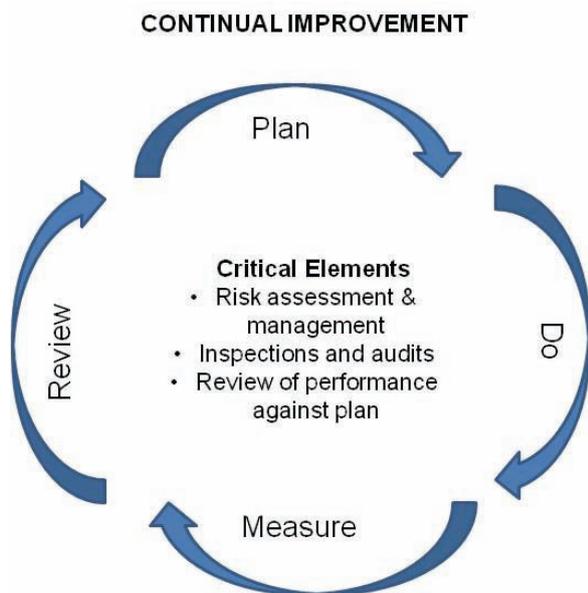
- Their client has classified the waste they will be transporting to a disposal site and that the disposal site can legally accept their client's waste stream;
- They have written approval to act as waste contractor in all the areas in which they operate – written approval by the local authority must be obtained (if applicable);
- They transport hazardous wastes in accordance with the requirements of the National Road Traffic Act (NRTA).
- They recycle and / or treat their client's wastes in accordance with their permit conditions and in a manner that prevents an adverse environmental impact.
- Any recycling and / or treatment facility to which they take their client's waste (or any residual waste from their own processes) has the required permits for each particular waste stream that they transport.
- They classify any residual waste from their recycling and / or treatment processes and ensure that it is disposed of at the correct landfill site and in compliance with the landfill sites permit conditions.
- They audit any waste facilities that they use to verify the environmental performance and legal compliance status.

**A SIMPLIFIED DIAGRAM DEPICTING SOME OF THE ACTIVITIES OF THE INTERMEDIATE WASTE CONTRACTOR**



## 2.3 MANAGEMENT SYSTEMS

If a company is serious about managing their impacts on environment, health and safety, they will have (or be willing to) implemented the appropriate management systems. The basis for all Management Systems is the principle of **continual improvement**. The key task is for potential risks to be identified, mitigated and managed. This applies to all aspects of the business, but especially for the management of Environmental, Health and Safety (EHS) issues in the workplace. Inspections and audits are conducted to check that the plan is working. Monitoring measures progress in achieving targets and reviews are conducted to see where improvements can be made. This is known as the cycle of plan, do, measure and review, as shown in the diagram below.



In order for businesses to remain profitable in the new world order, where imports are often cheaper, better and freely available, work needs to be done quicker and at the lowest price. It is within the context of these pressures that some organisations operate with poor EHS practices. However, good EHS performance goes hand in hand with long term sustainability. An organisation with poor housekeeping, many injuries and pollution incidents is not profitable in the long run. Incidents cost money as they

impact on so many areas, some obvious, others hidden.

### POTENTIAL IMPACTS OF H&S AND / OR POLLUTION INCIDENTS!



- Injuries require medical treatment, which costs money and will impact on Workman's Compensation contributions
- If the authorities investigate, vital staff are required to assist in the enquiry
- The process or facility may be stopped until the investigation is complete or until the identified problems are fixed
- There may be legal ramifications for the organisation and key personnel
- Injured employees may be off work or on light duty for lengthy periods – extra staff have to stand in while they are unavailable
- Temporary/contract employees, are often poorly trained and lack experience, so more incidents occur
- Colleagues have an increased work load, until the injured person recovers fully
- Insurance premiums may also increase
- Incidents may result in spillages of raw materials / or product, so raw materials are wasted and more product may need to be made
- Orders may not be completed in full or on time
- Customers may be lost
- Employee morale is affected in a working environment that is not managing EHS issues, and incidents will continue to recur
- Major pollution incidents can have serious cost implications both from a clean-up perspective and from a potential criminal liability of a director, manager, or employees

If a company focuses on continual improvement in all aspects of their business, inspections and audits will be an integral part of their programme. They will welcome external reviews, as a “fresh pair of eyes” can always add value. The organisations that do not have a management system are less likely to welcome audits and inspections, especially from the authorities. These visits are therefore likely to be stressful and undertaken unwillingly.

Remember to look for other issues that may be related to your Department. For example, you may be dealing with effluent, but you may observe health and safety problems which should be documented and sent to the relevant Department. Government resources are scarce, so if you report on all problems noted, the other officials will start to reciprocate when they do their inspections. In this way, premises will be assessed more often, which will influence standards in respect of continual improvement.



**TIP!** Pollution may arise from the **routine** processes, which is known as **normal operating conditions**. Authorisations (permits, licences) limits usually apply in these cases and in most companies the potential risks are usually identified and managed accordingly. However, the potential for significant pollution stems from **abnormal conditions**, such as during **maintenance** or during **emergencies**, when a major incident *occurs*.

When you are auditing, look for how abnormal and emergency situations have been predicted and managed. If they have not been identified as risks, they will not be controlled if things go wrong – and as we all know, they do go wrong, regularly!

## CHAPTER THREE: LEGAL FRAMEWORK

## SUMMARY

Legal Reference	Abbreviation	Issues
National Environmental Management Act	NEMA	Pollution prevention, environmental management principles, incident management
National Water Act	NWA	Pollution prevention, incident management, water use and licensing
Environment Conservation Act	ECA	Littering, permitting for waste facilities, disposal to permitted facilities
Hazardous Substances Act	HSA	Classification of certain substances as hazardous – 4 classes
National Road Traffic Act and National Road Traffic Regs	NRTA and Regs	Chapter 8: Transportation of dangerous goods and thus hazardous waste
SANS 10228	-	Legal requirements for the classification of dangerous substances – first step in waste classification – assigning the SANS 10228 classes
SANS 10229	-	Packaging requirements for transport of dangerous goods
SANS 10231	-	Operational requirements for transport of dangerous goods – including the despatch of hazardous wastes
Occupational Health and Safety Act	OHSA	Health and safety in the workplace and beyond the fence line
Hazardous Chemical Substance Regulations	HCS Regs	
Asbestos Regulations	Asbestos Regs	Storage, handling, transport and disposal of HCS, asbestos, lead and HBAs, including training requirements
Lead Regulations	Lead Regs	
Hazardous Biological Agents Regulations	HBA Regs	
Health Act and National Health Act	-	Prevention of nuisance conditions
DWAF Minimum Requirements series	Min Reqs	Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste
By-laws	-	Storage, registration of waste contractors, flammable substances storage and transport, permitting of scheduled trades, trade effluent discharge
National Environmental Waste Management Bill	NEM:WMB	Licensing of waste activities, priority wastes, establishment of norms and standards, requirements for storage, transport and disposal of waste, assessment and clean-up of contaminated land, establishment of a waste information system

### 3.1 WHAT ARE LEGAL REQUIREMENTS?

Legal requirements are those that are enforceable by law and may be grouped into the following fields:

- Waste Management and Pollution Control
- Resource Conservation and Utilisation
- Land Use and Planning

Apart from acts, international conventions, regulations and bylaws, legal requirements may also take the form of permits, licenses, authorisations, directives, and lease agreements. Some South African National Standards (SANS) documents have been incorporated into acts and regulations, thereby making them legally binding.

### 3.2 THE DEVELOPMENT OF LEGISLATION

The first step in changing policy in South Africa is the development of a Green Paper. This is usually in the form of a discussion document wherein various policy options are presented. The document is published in the Government Gazette and input is requested from all interested and affected parties. Once the Green Paper is finalised a more refined discussion document is produced called a White Paper. This is a broad statement of government policy on the subject. This document is published in the Government Gazette for comment.

Following the development of a White Paper, the Minister and officials within the relevant Department may draft legislative proposals to be considered by cabinet. These proposals may be gazetted into a bill for comment.

A bill is a draft version of an act. It may be proposing an entirely new act, or amending an existing act. It must be formally submitted to Parliament before they can consider making it a law.



#### NOTE:

If you are looking for a particular Act, Green Paper, White Paper, Regulation or Notice they are referenced as follows:

- The number of the Government Gazette (GG) in which they are published
- The date on which the Government Gazette was published
- The notice number (GN) within the Government Gazette that relates to the legislation under reference

For example: The National Environmental Management Act 108 of 1998 (GG 19519, GN 1540 of 27<sup>th</sup> November 1998)

Bills are usually discussed in the National Assembly or the National Council of Provinces (NCOP) and are also gazetted for public comment. The NCOP may hold special hearings to receive comments or suggestions from the public. Once the bill is approved it is allocated an act number and goes to the President for assent and signature, which is a requirement of the Constitution. It is then promulgated in the Government Gazette as an act.

Regulations may be promulgated to give more on specific compliance requirements in terms of an act. An example is the Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998 - commonly referred to as the Environmental Impact Assessment Regulations or EIA Regs. These tell you how to comply with the requirements of that particular section of the act.

Government Notices may also be published whereby other documents such as SANS documents are incorporated as legally binding requirements in terms of specific acts or regulations.

Acts and regulations may be promulgated at a National Level or at a Provincial level (under the old administration an act promulgated by a province was referred to as an Ordinance). Legislation at local authority level is referred to as a bylaw. Bylaws may be promulgated in terms of National or Provincial legislation.



#### IMPORTANT NOTE:

*Once an Act is gazetted, it may not immediately come into operation.*

The Act usually includes a section entitled “*Commencement*”. This section may say either that the Act:

- Commences on the date of publication, in which case it is immediately binding; or
- Takes effect on a date determined by the Minister by proclamation in the Gazette. In this case, the Gazettes need to be monitored for the publishing of a Notice that declares that the particular Act in question has commenced.

It is also important to note that sometimes only ***certain sections*** of a particular act come into effect, whilst other sections follow at a later stage. This is to allow for administrative actions to be undertaken by the relevant Department(s) before these sections may be implemented.

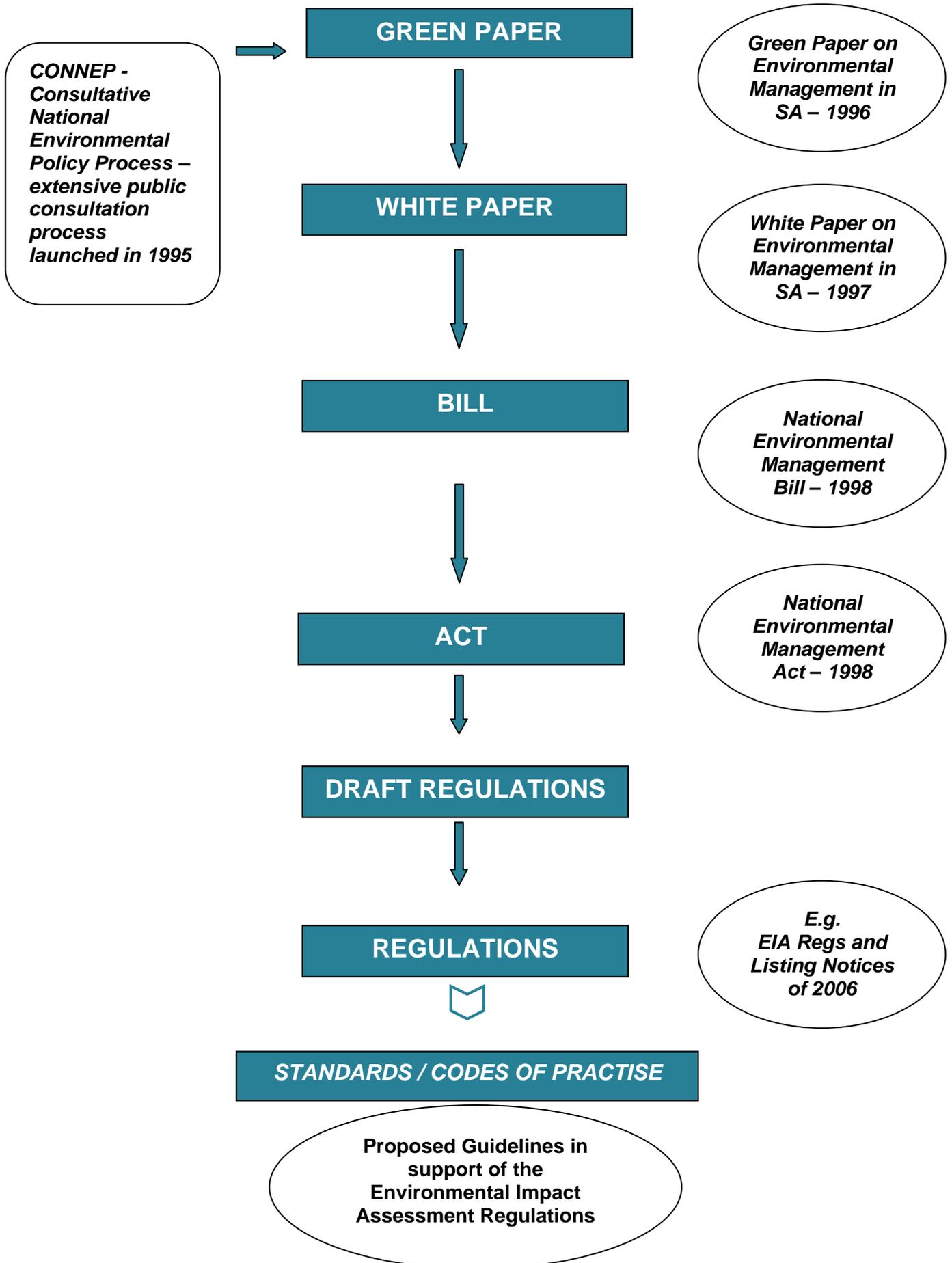
***For example:***

The National Environmental Management Air Quality Act 39 of 2004 was gazetted on 24<sup>th</sup> February 2005 but did not commence on this date.

The commencement date of 11<sup>th</sup> September 2005 was proclaimed in GNR 898, GG 28016 published on 9<sup>th</sup> September 2005. This notice however stated that the Act had commenced with the exception of Sections 21, 22, 36, 49 51(1)(e), 51(1)(f), 51(3), 60 and 61.

To date these sections have not come into effect and since S60 repeals the Atmospheric Pollution Prevention Act 45 of 1965 (APPA), APPA is still a legally binding act.

The diagram below depicts the development of the National Environmental Management Act 107 of 1998.



### 3.3 LEGISLATION PERTAINING TO WASTE MANAGEMENT

Waste management in South Africa is covered by a wide array of legislation at a **National, Provincial** and **Local** level (bylaws). To add to the complexities, legislation pertaining to waste issues is administered by a number of government departments including:

- The Department of Environmental Affairs and Tourism (DEAT)
- The Department of Water Affairs and Forestry (DWAF)
- The Department of Labour (DoL)
- The Department of Transport (DoT)
- Department of Health (DoH)
- Department of Minerals and Energy (DME)
- Provincial environmental departments
- Local authorities

This section seeks to *highlight* the *more important legislation* that has a bearing on waste management but is by no means a comprehensive narrative on the subject.



#### ENVIRONMENT CONSERVATION ACT DEFINITION (GN 1986 of 24/90): "WASTE"

*"..an undesirable or superfluous **by-product, emission, residue or remainder of any process or activity, any matter, gaseous, liquid or solid** or any combination thereof, originating from any residential, commercial or industrial area, which -  
is **discarded** by any person; or  
is **accumulated & stored** by any person with the **purpose of eventually discarding** it with or without prior treatment connected with the discarding thereof;  
building rubble used for filling or levelling purposes;  
is **stored** by any person with the **purpose of recycling, re-using or extracting a usable product** from such matter, excluding ..."*

### 3.3.1 THE CONSTITUTION OF SOUTH AFRICA, 108 OF 1996

Section 24 of the Constitution enshrines Environmental Rights for all citizens of our country by providing that we are entitled to an environment that is not harmful to our health or well-being.

Furthermore, we have the right to have the environment protected for present and future generations through reasonable legislative measures that include the prevention of pollution and implementation of ecologically sustainable development.

Section 24 of the Constitution therefore obliges companies to manage their wastes in a way that prevents pollution and does not negatively affect the health and well-being of their employees or the community at large.

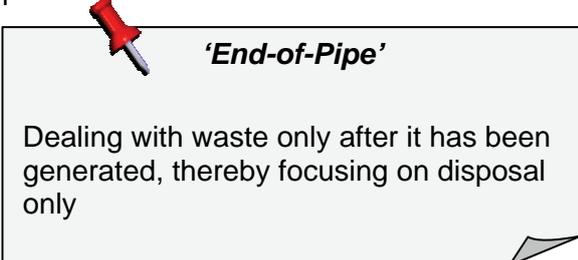
### 3.3.2 THE WHITE PAPER ON INTEGRATED WASTE MANAGEMENT AND POLLUTION CONTROL OF 2000

This document is not legally binding but is informative because it describes DEAT's approach to waste management. Industry therefore you should be aware of how the legal framework relating to waste management will be changed in the future.

The White Paper identified a number of important issues that needed addressing such as:

- The lack of priority afforded to waste management
- Fragmented legislation and ineffective enforcement
- Unacceptable safety, health and environmental practices for pollution and waste management
- The absence of integrated waste management options

The policy document was significant because it presented a change in thinking from a historic 'end-of-pipe' approach to pollution to a framework of preventative strategies that aim at waste minimisation and pollution prevention.



**'End-of-Pipe'**

Dealing with waste only after it has been generated, thereby focusing on disposal only

Seven strategic goals were identified in the policy:

- Effective Institutional Framework and Legislation
- Pollution Prevention, Waste Minimisation, Impact Management and Remediation
- Holistic and Integrated Planning
- Participation and Partnerships in Integrated Pollution and Waste Management Governance
- Empowerment and Education in Integrated Pollution and waste Management
- Information Management
- International Cooperation

### 3.3.3 THE NATIONAL WASTE MANAGEMENT STRATEGY (NWMS)

The National Waste Management Strategy (initiated during the late 90's) presents a long-term plan (up to the year 2010) for addressing key issues, needs and problems experienced with waste management in South Africa. It is also an action plan taking forward the goals of the White Paper on Integrated Waste Management and Pollution Control. The following priority initiatives were identified and are being addressed by the strategy:

- Integrated Waste Planning
- Waste Information Systems
- Waste Minimisation
- Recycling
- Waste Collection & Transport
- Waste Treatment
- Waste Disposal

### 3.3.4 THE POLOKWANE DECLARATION 2001

The Polokwane Declaration stemmed from a Waste Summit that was held in Polokwane during 2001. It was signed by government, business and civil society. The introduction to the declaration recognises that waste management is a priority for all South Africans and that there is a need for urgent action to reduce, reuse and recycle waste to protect the environment.

#### The vision of the declaration is:

*"To implement a waste management system which contributes to sustainable development and a measurable improvement in the quality of life, by harnessing the energy & commitment of all South Africans for the effective reduction of waste"*

#### The goal of the declaration is:

*"To reduce waste generation and disposal by 50% & 25% respectively by 2012 and develop a plan for Zero Waste by 2022"*

Although not a legally binding document, it gives clear direction on government's intention as far as waste reduction is concerned. **Companies you thus be actively pursuing waste prevention and minimisation programmes.**

### 3.3.5 ENVIRONMENT CONSERVATION ACT 73 OF 1989

The objective of the Environment Conservation Act (ECA) is to provide for the effective protection and controlled utilisation of the environment. The act is administered by DEAT and the provincial government department that deals with the environment, and is currently the main legislation that governs waste disposal in South Africa. Although most sections of the ECA have been repealed by the National Environmental Management Act (NEMA), those dealing with waste are still in effect.

**Section 19** prohibits the act of littering and therefore companies should ensure that their wastes are adequately contained within their premises.

**Section 20** deals with Waste Management and relates to the licensing of landfill sites and the disposal of waste.

**Section 20(1)** requires that landfill sites are permitted and **Section 20(9)** requires that *all* wastes are disposed at a disposal site that has been issued with a permit.

It is therefore necessary that all wastes are taken to permitted facilities – this includes recycling and treatment facilities. Generators should also obtain copies of all permits relating to the landfill site, recycling and / or treatment facility where their wastes are taken. These permits include a wide range of legally binding conditions. Generators should review these conditions to ensure that the facility is allowed to accept their particular type of waste. It is also best practise that they audit the waste facility to see if they are complying with their permit conditions.

**TIP!** Ask to see a copy of the waste facility's most recent *independent* external audit report. This will give you a clear indication of the management standard of the operation.



**Section 24** allows the Minister to make regulations with respect to a number of waste management issues. Some of these regulations are:

- Disposal site permit application
- Directions for control and management of general communal and general small waste disposal sites
- Noise control regulations
- Plastic bag regulations

### 3.3.6 NATIONAL ENVIRONMENTAL MANAGEMENT ACT 107 OF 1998

The National Environmental Management Act (NEMA) is the framework Act dealing with environmental management in South Africa. It is administered by DEAT and the provincial government department that deals with the

environment. It also establishes principles for decision-making on matters affecting the environment. Many of the principles can be related to waste management activities.

#### **Duty of Care Principle**

Companies need to take reasonable measures to prevent pollution from occurring, continuing or reoccurring. This means that they should ensure that their business activities and the management system that they implement (including those of your sub-contactors') is effective in achieving this objective.

This can include:

- Written policies, procedures and work instructions that ensure compliance with legal requirements
- Employee and sub-contractor training
- Provision of suitable equipment and infrastructure for the wastes that you are transporting, storing, recycling and treating;
- Regular inspections, self-audits and sub-contractor audits
- Developing and testing contingency plans to deal with environmental incidents especially those requiring emergency response as a result of an incident during the transport of the waste
- Maintenance of comprehensive records

#### **Cradle-to-Grave Management Principle**

The cradle-to-grave management of wastes means that wastes should be managed throughout the entire life-cycle. This means from the point of generation to the final disposal.

#### **NEMA PRINCIPLE**

S2(4)(e) *The Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.*



This includes having paperwork to cover:

- (1) The classification of wastes
- (2) Transportation in terms of the applicable legal requirements
- (3) Acceptance at recycling and / or treatment and / or disposal facilities that can legally do so
- (4) Auditing of your waste contractors and facilities to assess their legal compliance status

### **The Polluter Pays Principle**

Companies can face a host of liabilities if their waste management practises cause pollution. These liabilities can include clean-up and remediation costs, fines, **even jail terms and a criminal conviction.**

#### **NEMA PRINCIPLE**

*S2(4)(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.*



The responsibility for handling, treating and disposing of wastes can pass from one party to another, but all parties can be held accountable for the pollution caused by the waste. Each company must therefore manage their wastes responsibly and ensure that they are able to prove that they have complied with all applicable legal requirements. This can be achieved by ensuring that:

- The waste has been classified correctly;
- The disposal site can legally accept the waste stream;
- Approved waste contractor are used – written approval by the local authority must be obtained (if applicable in your area);
- Hazardous wastes are transported in accordance with the requirements of the National Road Traffic Act (NRTA).
- Wastes are recycled and / or treated in accordance with the facilities permit

conditions and in a manner that prevents an adverse environmental impact.

- All recycling and / or treatment facility where wastes are taken have the required permits for each particular waste stream that is received.
- All permits / authorisations as required by law are available for the waste activities that the company undertakes.
- Waste facilities are audited to verify their environmental performance and legal compliance status.

### **The Precautionary Principle**

The precautionary principle dictates that wastes must be classified as hazardous until proven otherwise. Companies need to ensure that they have classified their wastes correctly so that it is transported and disposed at the correct landfill site. Recycling / treatment / disposal must be done in terms of each facilities permit conditions.

#### **NEMA PRINCIPLE**

*S2(4)(a)(vii): That a risk-averse and cautious approach is applied which takes into account the limits of current knowledge about the consequences of decisions and actions.*



### **The Waste Hierarchy**

The application of the waste hierarchy is an essential part of all companies waste management program. Companies should be reviewing methods of waste prevention and minimisation, resource recovery opportunities, and waste treatment technologies. Waste disposal should only be considered as a last resort in their management strategy.

#### **NEMA PRINCIPLE**

*S2(4)(a)(iv) That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible & otherwise disposed of in a responsible manner.*



## Environmental Authorisations

**Section 24** of NEMA deals with Environmental Authorisations (previously obtained with under the Environment Conservation Act). Companies starting a new activity that is included in those listed in *GNR 386 of 21<sup>st</sup> April 2006* will need to undertake a **basic assessment** in terms of the EIA Regulations promulgated under S24(5) of NEMA.



### NOTICE 386

Some waste activities detailed in Notice 386 are:

Activity 1(o): The establishment of facilities for *the recycling, re-use, handling, temporary storage or treatment of general waste with a throughput capacity of 20 cubic metres or more daily average measured over a period of 30 days, but less than 50 tons daily average measured over a period of 30 days.*

Activity 23(f): The decommissioning of facilities for *the recycling, handling, temporary storage or treatment of general waste with a daily throughput capacity of 20 cubic metres or more.*

Activity 23(g): The decommissioning of facilities for *the recycling, handling, temporary storage or treatment of hazardous waste.*

If companies are starting a new activity that is included in those listed in *GNR 387 of 21<sup>st</sup> April 2006* they will need to undertake a **scoping and environmental impact** assessment in terms of the EIA Regulations promulgated under S24(5) of NEMA.

### IMPORTANT!

COMPANIES MUST BE AWARE THAT THEY NEED TO CHECK THE LISTS OF ACTIVITIES BEFORE THEY COMMENCE ANY NEW DEVELOPMENT OR MODIFY / EXPAND THEIR EXISTING PROCESSES!



### NOTICE 387

Some waste activities detailed in Notice 387 are:

Activity 1(f): The establishment of facilities for *the recycling, re-use, handling, temporary storage or treatment of general waste with a throughput capacity of 50 tons or more daily average measured over a period of 30 days*

Activity 1(g): The establishment of facilities for *the use, recycling, handling, treatment, storage or final disposal of hazardous waste*

Activity 1(q): The establishment of facilities for *the incineration, burning, evaporation, thermal treatment, roasting or heat sterilisation of waste or effluent, including the cremation of human or animal tissue*

Activity 1(r): The establishment of facilities for *the microbial deactivation, chemical sterilisation or non-thermal treatment of waste or effluent*

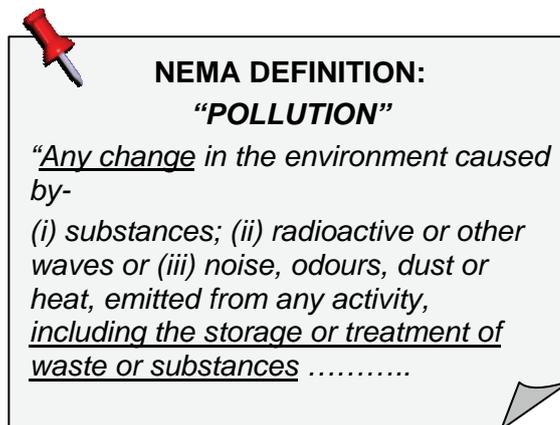
Companies will be issued an Environmental Authorisation by the local provincial department that deals with environmental matters (previously called a Record of Decision – RoD). ***It is important that they comply with all the requirements of the authorisation.***

### Section 28 Duty of Care and Remediation of Environmental Damage

Perhaps the most important section of NEMA with respect to waste management in industry is **Section 28** which prescribes certain actions to be taken in respect of pollution. In a nutshell, **Section 28** requires every person who causes, has caused or may cause significant degradation of the environment to take reasonable measures to prevent the pollution or degradation from occurring, continuing or recurring. It is important to note that should a company

contravene this provision, then the authorities have the power to issue a directive under **Section 28(4)** prescribing remediation steps that must be taken. Should the company fail to comply with this directive, the authorities have the power to undertake the necessary work and recover the costs from the company.

Although the act is not entirely prescriptive in what reasonable measures are required to be taken, it does provide some direction as to what reasonable measures include. See examples given in the diagram below.



**NEMA DEFINITION:  
“POLLUTION”**

*“Any change in the environment caused by-*

*(i) substances; (ii) radioactive or other waves or (iii) noise, odours, dust or heat, emitted from any activity, including the storage or treatment of waste or substances .....*

### Reasonable measures (S28(3)) include:

*“Investigate, assess and evaluate the impact on the environment” – S28(3)(a)*

- For example companies should identify their waste streams, classify the hazardous wastes, assess the different options for each waste stream and evaluate each option in terms of minimising the environmental impact.

*“Inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment” – S28(3)(b)*

- For example companies should develop and implement appropriate waste management procedures and work instructions. They should also to train their staff (including contractors and temporary employees) accordingly.

*“Cease, modify or control any act, activity or process causing the pollution or degradation” – S28(3)(c)*

- For example, if a company discharges effluent to the sewer that does not comply with the local authority requirements, they need to stop and implement a program that ensures compliance with discharge standards, such as pre-treatment and monitoring of effluent quality.

*“Contain or prevent the movement of pollutants or the causant of degradation” – S28(3)(d)*

- For example companies should ensure that their wastes are stored on-site in a manner that prevents pollution.

*“Eliminate any source of the pollution or degradation” – S28(3)(e)*

- For example, if contaminated stormwater is leaving a company’s premises, they must implement a program to eliminate the contamination. This may involve the separation of effluent and stormwater, spillage prevention and response procedures, bunding of tanks etc

*“Remedy the effects of the pollution or degradation” – S28(3)(f)*

- For example, if a company stockpiles waste on the ground and the soil (and possibly the groundwater too) is contaminated they need to clean-up and remediate!

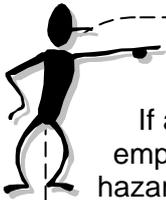
## DID YOU KNOW?



The **Section 28 pollution prevention duties** are placed on:

- The **owner** of the land or premises
- The person **in charge** of the land or premises or
- The person who has the **right to use** the land or premises.

An example: If an activity has caused pollution on a property, the landlord could be held accountable for paying for the clean-up even if they were not directly involved in causing the pollution!



## CAUTION!

If a company asks one of their employees to discharge a drum of hazardous waste into a nearby river, he/she has the right to refuse to do this, as it would be a threat to the environment (**Section 29- Protection of workers refusing to do environmentally hazardous work**). They are also not allowed to dismiss, discipline, prejudice or harass this employee for exercising their rights!

Another important section of NEMA to be aware of is **Section 30** “Control of Emergency Incidents” which details a number of actions that companies need to take should they have an emergency incident on or even off-site (such as when the waste company is transporting hazardous waste to the landfill site).



## NEMA S30(1)(a) DEFINITION: INCIDENT

*“An unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed”*

The responsible person is required to take certain actions including:

- Immediate reporting
- Containment and clean-up measures
- Remediation measures
- Post-incident reporting (to be submitted within 14 days of the incident)

NEMA defines responsible person as *including any person who:*

- *Is **responsible** for the incident;*
- ***Owns** any hazardous substance involved in the incident; or*
- *Was in **control** of any hazardous substance involved in the incident at the time of the incident.*

This means that companies can potentially be held liable for an incident that happened as a result of work that was being carried out by a waste contractor acting on their behalf.

One of the criticisms relating to the state of the environment in South Africa is an apparent lack of enforcement of environmental legislation. The introduction of newly appointed and trained Environmental Management Inspectors (EMIs) – or Green Scorpions as they are commonly known – has been one of the important steps forward for monitoring and enforcing compliance with environmental management acts.

These inspectors can be from national, provincial or local government. They have wide-ranging powers that extend as far as revoking permits and licences. Companies need to be aware that these officials can visit their premises company at any time to review their environmental management practises and compliance with relevant permits, licenses and authorisations.

Most managers in South Africa are aware that offences committed in terms of the Occupational Health and Safety Act 85 of 1993 are criminal offences. **Section 34 of NEMA also establishes the basis for directors, managers and employees to be held criminally liable for an offence that has been committed in terms of a list of Acts as detailed in Schedule 3 of NEMA.**

### POTENTIAL LIABILITIES!

Liabilities that could be faced by a company that causes pollution include:

- Clean-up costs
- Remediation costs (long-term implications)
- Fines
- Criminal records and jail sentences for directors, managers and employees
- Payment of administrative costs of the state with respect to the investigation and prosecution
- Payment of the monetary value of any benefit that the guilty party achieved as a result of the offence



### 3.3.7 NATIONAL WATER ACT 36 OF 1998 (NWA)

The National Water Act deals with issues such as the protection of South Africa's water resources. The Act is similar in many respects to NEMA but focuses on pollution of water resources only.

It is administered by the Department of Water Affairs and Forestry (DWAF).



### NWA DEFINITION: POLLUTION

*“the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it—*

- (a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or*
- (b) harmful or potentially harmful—*
  - (aa) to the welfare, health or safety of human beings;*
  - (bb) to any aquatic or non-aquatic organisms;*
  - (cc) to the resource quality; or*
  - (dd) to property”*

As with NEMA, the NWA also contains a duty to prevent pollution which is detailed in **Section 19: Prevention and remedying effects of pollution**. This section requires that an owner of land, a person in control of land or a person who occupies or uses the land on which any activity or process is or was performed that causes or is likely to cause pollution of a water resource, to take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.

A number of reasonable measures are detailed. A directive can be issued to companies that have not undertaken the required actions (S19(3)). Failure to comply with the requirements of a directive can result in the required measures being undertaken by the authorities with the costs being charged to the company.

**Section 20** of the NWA deals with the control of emergency incidents. Companies must be aware of this section if they store waste in a manner that may impact on a water resource following an incident. It is also relevant if they employ waste

companies to remove hazardous waste from their premises. The waste companies' vehicles may be involved in an incident, which has the potential to cause water pollution.



**NWA S20(1) DEFINITION:  
INCIDENT**

*“any incident or accident in which a substance—*

- (a) pollutes or has the potential to pollute a water resource; or*
- (b) has, or is likely to have, a detrimental effect on a water resource”*

The NWA defines the responsible person under Section 19(2) as *including any person who:*

- *is **responsible** for the incident;*
- ***owns** the substance involved in the incident; or*
- *was in **control** of the substance involved in the incident at the time of the incident”*

The responsible person is required to take certain actions including:

- Immediate reporting
- Containment and clean-up measures
- Remediation measures
- Measures that may be prescribed by the Catchment Management Agency

A number of Water Uses are described in **Section 21** of the NWA and some of these water uses are applicable to waste management practises.

*Section 21(f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer or sea outfall or other conduit*

This water use includes discharging waste or wastewater directly into a river.

Note that this does not include the discharge of waste effluent into a sea outfall or sewer

that is under the control of an entity authorised to undertake the purification, treatment and disposal of the waste or water containing waste. Companies need a permit to from the responsible authority to discharge their effluent and would need to comply with the prescribed discharge standards.

*Section 21(g) Disposing of waste in a manner which may detrimentally impact on a water resource*

This water use applies where waste disposal takes place into facilities on-site, for example

- French drains / conservancy tanks
- Oxidation ponds
- Evaporation dams
- Landfill sites

*Section 21(h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process*

This water use typically refers to instances where effluent from power generation processes is discharged into the environment.



**NWA DEFINITION:  
WASTE**

*“ includes any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted”*

If companies need a water use license a useful document explaining the authorisation process is available on the DWAF website – it is entitled *Department of Water Affairs and Forestry, 2000. Water Use Authorisation process (individual applications). Edition 1 (March 2000)*. The poster below (sourced from the DWAF website) is a useful illustration depicting the different types of water uses.

## We all live downstream from each other

### USERS

Dictating the receiving water quality requirements



**Agricultural**



**Industry**



**Recreation**



**Domestic**



**Aquatic ecosystem**

### USES

Potentially impacting on the water resource



**Taking water from a resource**



**Storing water**



**Impeding or diverting the flow of water in a watercourse**



**Engaging in a streamflow reduction activity**



**Engaging in a controlled activity**



**Discharging waste or water containing waste into a water resource**



**Disposing of waste in a manner which may detrimentally impact on a water resource**



**Altering the bed, banks, course or characteristics of a watercourse**



**Removing, discharging or disposing of water found underground**



**Using water for recreational purposes**



**Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process**



## Water Quality Management

For more information contact Tel: (012) 336 7542 [www.dwaf.gov.za/directorates/wqm](http://www.dwaf.gov.za/directorates/wqm)

Water use licenses may be required, if a company is engaged in a water use activity (refer to the poster). The water use may however be exempt in terms of the Revision of General Authorisations as promulgated in 2004 (GN 399, GG 26187 dated 26 March 2004). Waste related water use may however be exempt in terms of the Revision of General Authorisations as promulgated in 2004 (GN 399, GG 26187 dated 26 March 2004). Information and application forms can be obtained from the following website <http://www.dwaf.gov.za/Projects/WARMS> (accessed February 2009).

### **3.3.8 OCCUPATIONAL HEALTH AND SAFETY ACT 85 OF 1993**

The Occupational Health and Safety Act (OHSA) provides for the health and safety of persons at work. It also serves to protect the surrounding the community against hazards as a direct result of the activities of at a place of work. It places duties on employers and employees and is administered by the Department of Labour (DoL).

#### **POTENTIAL LIABILITIES!**

Companies should not forget about their contractors, when dealing with health and safety issues. In terms of S37 of the OHSA they can be held liable for an offence that their contractor has committed.

Companies should ensure that Health, Safety and Environmental Agreements are concluded with their contractors and that they audit their performance from time to time.

It is also important that they receive a letter of good standing from the Compensation Commissioner for each contractor used. They should also obtain copies of the contractors' safety, health and environmental management plans and training records depending on the scope of work to be carried out.



All waste management activities need to be carried out in accordance with the requirements of the OHSAct such as:

- Waste management practises must be safe and without risk.
- Risk assessments conducted should include waste related activities.
- Waste management training should be provided to employees and contractors.
- Written work instructions should be provided where necessary.
- Relevant personal protective equipment (PPE) and respiratory protective equipment (RPE) must be provided as a last resort after all other mitigatory measures have been reviewed.

A number of regulations promulgated in terms of the OHSA have a bearing on waste management issues. They are detailed in the following sections and are all administered by the DoL.

### **3.3.9 HAZARDOUS CHEMICAL SUBSTANCES REGULATIONS OF 1995**

The Hazardous Chemical Substances Regulations (HCS Regs) are promulgated in terms of the OHSA. There are a number of duties with which you companies must comply when handling hazardous chemical substances (HCS) and therefore hazardous wastes. The regulations are very long and detailed. A few of the more relevant sections with respect to waste management are included in this section.

It is important to note the training requirements which can assist companies to improve upon their waste management practises. See the following page for some examples.

## Some of the HCS Regs Training requirements and how they can benefit a company's waste management program

*R3(1)(i) "The importance of good housekeeping at the workplace and personal hygiene"*

- Training employees in good housekeeping is one of the ways in which to minimise the generation of excess wastes. Washing hands before eating and not smoking, are ways to minimise exposure, while handling wastes.

*R3(1)(j) "The safe working procedures regarding the use, handling, storage and labelling of the HCS at the workplace"*

- Employees should be trained in all aspects of HCS management. This can assist the waste management program in a number of ways, for example: knowing how to identify the hazardous wastes and to keep them separate from the general wastes; and labelling all containers storing hazardous wastes to ensure that the contents are known when they need to be disposed of to landfill.

*R3(k) "Procedures to be followed in the event of spillages, leakages or any similar emergency situation which could take place by accident"*

- Spillages and other emergency situations always result in the generation of some type of waste. If employees have been trained in the procedures to follow, they can respond quicker and reduce the amount of waste that is generated.

**Regulation 9A** of the HCS Regs makes it compulsory to obtain a 16-point (headings) Material Safety Data Sheet (MSDS) for any hazardous chemical substances (HCS) that are used. The HCS may form part of a company's hazardous waste streams and therefore the MSDSs are important documents that may be used to assist with the classification of wastes.

Emissions of HCS to atmosphere are dealt with under **Regulation 10**: Control of exposure to HCS. Regulation 10(3) requires emissions to the environment to comply with the Atmospheric Pollution Prevention Act, 45 of 1965 (APPA).

**Regulation 14** deals with the labelling, packaging, transportation and storage of HCS and requires that all HCS are properly identified, classified, labeled, transported and stored.

The disposal of HCS is detailed in **Regulation 15**. Specific requirements are listed, including the recycling, storing of HCS

waste, transportation, and disposal of HCS waste to a permitted landfill site, and the requirement that staff exposure at these facilities is prevented.

The HCS Regs also requires that companies include a clause in the contract that they sign with their waste service provider that they will also comply with the requirements of the Regs when dealing with the wastes.

### **3.3.10 ASBESTOS REGULATIONS OF 2001**

The Asbestos Regulations contain similar provisions that are relevant to waste management to those in the HCS Regs. Specific attention is drawn to:

- R5: Information and training – training on the safe disposal of asbestos waste is listed as a requirement
- R19: Labelling, packaging, transportation and storage
- R20: Disposal of asbestos

DWAF have produced a useful policy document on asbestos which is included in

Annexure One of this guideline. If companies generate asbestos waste in their operations it is important to ensure that they have taken these requirements into account.

Emissions of asbestos to the environment are dealt with under **Regulation 13**: The control of exposure to asbestos of persons other than employees. The requirements include:

- Prevention of the release of dust to atmosphere;
- Filtering water which may contain asbestos fibres before it is released;
- Disposal of all contaminated material as asbestos waste; and
- Ensuring measures are taken to prevent the release of asbestos dust to atmosphere during transportation.

The Regs also require that companies have a clause in the contract that they sign with their waste provider that they will also comply with the requirements of the Asbestos Regs.

### 3.3.11 LEAD REGULATIONS OF 2001

The Lead Regulations contain provisions that are relevant to waste management. Specific attention is drawn to:

- R4: Information and training – training on the safe disposal of lead waste is listed as a requirement
- R16: Labelling, packaging, transportation and storage
- R27: Disposal of lead waste

If companies generate lead waste in their operations it is important that they ensure that they have taken these requirements into account.

Emissions of lead to the environment are dealt with under **Regulation 11**: Control of exposure to lead. Regulation 11(3) requires that the release of lead into any environment or water system complies with the provisions of the Atmospheric Pollution Prevention Act (APPA), the Environment Conservation Act (ECA), the National Water Act (NWA), and the National Environmental Management Act (NEMA).

The Lead Regs also requires companies to have a clause in the contract that they sign with their waste provider that they will comply with the requirements of the Regs.



#### **HBA REGS DEFINITION: HAZARDOUS BIOLOGICAL AGENT**

*“Hazardous biological agents which are micro-organisms, including those that have been genetically modified, pathogens, cells, cell cultures and human endoparasites that have the potential to provoke an infection toxic effects (sic), subdivided into the following groups....”*

The definition goes on to define four different groups of HBA, from Group 1 which is unlikely to cause human disease to Group 4 which causes severe disease with a high risk of spreading to the community and for which no effective treatment is available.

### 3.3.12 HAZARDOUS BIOLOGICAL AGENTS OF 2001

The Hazardous Biological Agents (HBA) Regulations contain provisions that are relevant to waste management.

Specific attention is drawn to:

- R4: Information and training R14: Labelling, packaging, transportation and storage
- R17: Disposal of HBA

If companies generate HBA waste in their operations it is important that they ensure that you have taken these requirements into account. Emissions of HBAs to the environment are dealt with under Regulation 10(2)(e) which requires emissions to the atmosphere to comply with the provisions of APPA.

The HBA Regs also requires companies to have a clause in the contract that they sign with their waste provider that they will comply with the requirements of the Regs.

### **3.3.13 HEALTH ACT 63 OF 1977 AND THE NATIONAL HEALTH ACT 61 OF 2003**

The Health Act provides measures for the promotion of health of the citizens of South Africa and is administered by the Department of Health (DoH). The Act has an impact on waste management in that it obliges local authorities to prevent nuisances and offensive conditions within their areas. Most local authorities have published bylaws in terms of this Act that deal with various activities (trades) that require permitting. It is thus important for companies to check if they require a permit (See Sections 2.3.19 and 2.3.20 for further details).

Most of the provisions of the Health Act have been repealed since the promulgation of the National Health Act. The latter Act provides for municipal health services which include:

- Water quality monitoring;
- Waste management;
- Health surveillance of premises;
- Environmental pollution control;
- Chemical safety

Environmental Health Officers can therefore be tasked with undertaking investigations in circumstances such as where pollution poses a danger to human health as a result of waste management activities.

### **3.3.14 HAZARDOUS SUBSTANCES ACT 15 OF 1973 (HSA)**

This Act is administered by DoH. One of the aims of the Act is to “provide for the control of substances, which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitising or flammable nature or the generation of pressure...”. Four groups of hazardous substances have been declared under the Act.



#### **GROUP I AND II HAZARDOUS SUBSTANCE:**

*Substances dangerous to humans due to their toxic, corrosive, irritant, strongly sensitizing or flammable nature or because they generate pressure through decomposition, heat or other means*

[For the details of what Group I substances are – see GNR 452 of 25 March 1977]

[For the details of what Group II substances are – see GNR 1382 of 12 August 1994]

#### **GROUP III HAZARDOUS SUBSTANCE:**

Refers to certain electronic products

[For the details of what Group III substances are – see GNR 1302 of 14 June 1991]

#### **GROUP IV HAZARDOUS SUBSTANCE:**

This group includes radioactive substances which are defined in S1 of the Act as:

*“radioactive material which is outside a nuclear installation as defined in the Nuclear Energy Act, 1999, and is not a material which forms part of or is used or intended to be used in the nuclear fuel cycle, and—*

- (a) *has an activity concentration of more than 100 becquerels per gram and a total activity of more than 4 000 becquerels; or*
- (b) *has an activity concentration of 100 becquerels or less per gram or a total activity of 4 000 becquerels or less and which the Minister has by notice in the Gazette declared to be a Group IV hazardous substance,*

*and which is used or intended to be used for medical, scientific, agricultural, commercial or industrial purposes, and any radioactive waste arising from such radioactive material”*

No regulations have been promulgated for Group II substances which are those listed in SANS 10228, excluding Class I (explosive substances) and Class 7 (radioactive substances).

The regulations relating to Group III and Group IV substances are very detailed and as they have limited application in respect to this guide they are referenced below for information purposes:

- Regulations relating to Group III hazardous substances (GNR 690 of 14 April 1989)
- Regulations relating to Group IV hazardous substances (GNR 247 of 26 February 1993)

### 3.3.15 NATIONAL ROAD TRAFFIC ACT 93 OF 1996 (NRTA)

If companies generate hazardous waste, they must comply with Chapter 8 of the National Road Traffic Act (NRTA) and the National Road Traffic Regulations of 2000. Dangerous Goods (as defined in SANS 10228) cannot be transported unless companies comply with the requirements of the Act and the Regulations. The dispatch of hazardous waste off-site therefore falls under these requirements.

#### SANS Documents

A number of SANS documents have been incorporated into the legislation. Some of these are detailed in the adjacent table. It is recommended as a minimum that companies keep copies of the documents marked (\*). They may however need other documents depending on the nature of their business practises.

It is essential that companies purchase copies of the relevant SANS documents so that they are able to identify the requirements applicable to their operations. This can be done electronically on the following website: [www.sabs.co.za](http://www.sabs.co.za) or at the local South Africa Bureau of Standards offices.

Remember that these documents are updated from time to time so keep abreast of any new developments.

**IMPORTANT!**

WASTE GENERATORS AND TRANSPORTER HAVE RESPONSIBILITIES UNDER THE NTRA!

SANS	DOCUMENT TITLE
SANS 1518(*)	Transport of dangerous goods – Design requirements for road vehicles and portable tanks.
SANS 10228(*)	The identification and classification of dangerous substances and goods.
SANS 10229	Packaging and large packaging for road and rail transportation in South Africa. Part 1 – Packaging.
	Packaging and large packaging for road and rail transportation in South Africa. Part 2 – Large Packaging.
SANS 10231(*)	Transportation of dangerous goods – Operational requirements for road vehicles. Note: The 2006 revision replaces SANS 10230 (Transportation of dangerous goods-Inspection requirements for road vehicles) and SANS 10189 (The operation, handling, and maintenance of road tank vehicles for flammable liquids) and SANS 10231:2003).
SANS 10232(*)	Transportation of dangerous goods – Emergency information systems. Part 1 – Emergency information system for road transportation.
	Transportation of dangerous goods – Emergency information systems. Part 3 – Emergency response guides
	ANNEX A : 2000: Emergency Response Handbook
	Transport of dangerous goods – Emergency information systems. Part 4 – Transport emergency card.
SANS 10233(*)	Transport of dangerous goods – Intermediate bulk containers.
SANS 10406(*)	Transport of dangerous goods – The reprocessing of previously certified packaging.



**NATIONAL ROAD TRAFFIC REGULATIONS – R273  
DEFINITIONS**

**CONSIGNOR**

*'The person who offers dangerous goods for transport'.*

**CONSIGNEE**

*'The person who accepts dangerous goods'.*

**OPERATOR**

*'The person responsible for the use of a motor vehicle of any class and who has been registered as the operator of such vehicle'.*

**QUALIFIED PERSON**

*'A person trained to perform any specific task, nominated by the operator, consignor or consignee'.*

**Consignor Duties**

The **consignor** of hazardous wastes has a number of legal responsibilities. Some of these (extracted from SANS 10231:2006) are listed below:

- **Correct classification** of the goods in terms of SANS 10228 (*This is a requirement for waste disposal and for transport purposes*);
- Correct **packaging** of the waste in terms of SANS 10229 and SANS 10233;
- Check that the vehicle removing the waste displays a **dangerous goods operator card**;
- Loading carried out by a **qualified person**, trained in the relevant procedures, under the supervision of a dangerous goods loading supervisor;
- The Driver has a signed **Dangerous Goods Declaration** (DGD); and
- **Placards, transport emergency cards** or the information with regard to the correct placards or transport emergency cards is supplied to the

operator (*this is therefore the waste generator's responsibility but the waste contractor should discuss and agree on the information to be used*).

**IMPORTANT!**



The SANS 10231 definition of **consignor** takes it a bit further –

3.1.7 *'person who offers goods for transport in a vehicle referred to in the relevant legislation'* and

**NOTE:** *The consignor can be either the product manufacturer, or the product owner or the party that contracts the operator or the product custodian'.*

**Product manufacturer** is defined in 3.1.20 *'as the person who manufactures the product or produces the product'*

**Product owner** is defined in 3.1.21 *'as the person who has legal ownership of that product at that particular time'*

**Party that contracts the operator** is defined in 3.1.18 as the *person who enters into a contract for the transport of dangerous goods with the operator*

**Product custodian** is defined in 3.1.19 *as the person who has control of the dangerous goods at a particular time but does not necessary own the goods*

Waste contractors managing wastes at a client's premises and despatching the waste on their behalf could therefore be the product custodian. This should be covered in the contractual agreements between the companies.

**Operators Duties**

The **operator** has a number of responsibilities. The following are some issues with which they should be complying (extracted from SANS 10231:2006):

- **Registration** with the **Department of Transport** as a Dangerous Goods Operator and the operator's card

displayed on the vehicle's windscreen (This is a disc that is affixed to the windscreen. It looks like a license disc but should display the heading OPERATOR CARD. In the section marked Category, you should see the letters G and D, meaning that the vehicle is licensed to carry for general and dangerous goods – this disc has an expiry date so that must be checked as well)

- Use of drivers with a **valid professional driving permit** (PrDP-D) for dangerous goods?
- **Notification of the emergency services** and provision of information relating to the products that are being transported through the local authority area
- Use of **trained drivers** – by an approved training body on an annual basis (An accredited training provider is one that has been approved by The Transport Education Training Authority – TETA and the Department of Transport – records must be kept with the driver)
- Provision of a **route plan** to the drivers
- Provision of a **procedure** to the driver to report accidents
- Provision of **safety equipment** to the drivers in accordance with the information on the transport emergency card
- **Training of drivers** to use the **safety equipment** that has been issued to them

### IMPORTANT!

Operators must ensure that they have **insurance cover in place** which is based on the hazard and risk of the substances carried. It should cover: civil liability AND recovery and rehabilitation costs (SANS 10231:2006 Clause 5.2)



The consignee is the person who receives the hazardous wastes that have been transported. They are responsible for offloading the goods and for providing the qualified person or dangerous goods off-loading supervisor to manage the off-loading

process, unless there is an agreement to the contrary.

## Loading Operations

Waste generators are responsible for ensuring that loading as specified in SANS 10231:2006 is carried out by a **qualified person** trained in the relevant procedures. Transporters are also an integral part of this process and they should ensure that they document these arrangements with their clients.



**SANS 10231:2006  
DEFINITION  
DANGEROUS GOODS LOADING/  
OFFLOADING SUPERVISOR**

*'Qualified person trained to supervise the loading or off-loading of dangerous goods or substances, nominated by the consignor or consignee in terms of the relevant legislation (see Annex A)'*

The qualified person or loading supervisor's responsibilities include:

- The vehicle is correctly parked;
- The area is safe and warning signs placed if required;
- The necessary safety and first aid equipment is provided in accordance with the transport emergency card;
- Loading is carried out in a safe manner and other activities in the area do not create any risk;
- The load is adequately secured;
- The load is correctly classified and packaged;
- The vehicle is suitable for the purpose and is clean and fit to load;
- If the vehicle has been used for a previous load and a certificate of cleaning or a gas free certificate has not been presented, then compatibility of the substances must be ensured;
- The loaded goods are all compatible (especially in the case of loads of mixed drums collected from different clients of the waste contractor);

- The correct quantity is loaded;
- The load is undamaged and properly secured (drums should be in good condition and the waste containers must not be leaking);
- The placards are fitted onto the vehicle;
- The driver has the necessary transport emergency card(s);
- The Dangerous Goods Declarations (DGDs) have been supplied to the driver.

- ✓ **Post-loading checks:** correct transport emergency card of which the contents are understood; route plan, DGD stored (for that load only) in designated space; safety equipment available that he / she knows how to use; placards and warning diamonds in place; vehicle is not overloaded and load is secured; en-route procedures are followed (as detailed in SANS 10231:2006 Section 5.3).

### **Off-loading Operations**

The following are some compliance issues of which companies should be aware with respect to off-loading (extracted from SANS 10231:2006):

- The cargo must be correct, undamaged and there must be no obvious spillage;
- The load must be refused if there is doubt that it can be off-loaded without risk;
- Offloading may not proceed if the conditions are deemed unsafe;
- After off-loading, no residue must remain on the vehicle and it must be free from contamination;
- If the vehicle cannot be certified clean, then the placards must remain in place.

### **Driver Duties**

Operators must be aware of the number of duties with which their drivers must be charged.

They must:

- Have the required skills and training;
- Undertake a number of vehicle checks:
  - ✓ Preliminary checks – operators card; vehicle is roadworthy; complete the checklist (provided in SANS 10231-2006 Annexure E.2); vehicle free from any product likely to create a safety hazard;
  - ✓ **Pre-loading checks:** site is suitable, vehicle correctly positioned; permission given for loading;

### **The Dangerous Goods Declaration**

Operators must ensure that they use a **waste manifest document** that complies with the requirements of SANS 10232-1:2007. This means that the document **has to include** the following content:

- Heading 'DANGEROUS GOODS DECLARATION';
- Proper shipping name in accordance with SANS 10228 – for example: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, NOS (Not Otherwise Specified);
- The UN number – for example, for the above substance this would be 3082 with the word WASTE added;
- The hazard class and packing group, where applicable. Using the above example this would be Hazard Class 9 and Packing Group III;
- The quantity, and type of packaging, or the word 'BULK' where applicable;
- The gross and net mass or volume of the goods;
- The names and contact details for the following parties (where applicable): consignor..operator..consignee;
- The following declaration signed by the consignor: *"I hereby declare that the content of this consignment is fully and accurately described above by the proper shipping name, and is classified, packaged, marked and labelled / placarded in all respects in proper condition for transportation, in accordance with the applicable national government regulations"*;

- The following declaration signed by the driver: *"The consignment above has been received into my vehicle. My vehicle is correctly placarded and I am in possession of all necessary transport documentation pertaining to the transport of dangerous goods including information to be followed in the case of an emergency"*.



### CAUTION!

Operators should note the implications of what their drivers are signing. They need to have been trained in the necessary requirements and also to have been informed to refuse a load that does not comply with their paperwork.

Generators should note who in their organisation is signing the dangerous goods declarations. Many companies assign this responsibility to the security guard at the gate!

This is a legally binding document and may be used against a company in the event of an incident!

### The Transport Emergency Card

The transport emergency card is an important document as it is intended to be used by the driver and the responders in the event of an emergency. It contains important safety information that may have to be used if the driver is unable to provide information about the load. Generators and operators need to ensure that the correct transport emergency cards are being used for each of the hazardous waste loads that are being transported.

The transport emergency card must be generated by either:

- The CEFIC system (European Chemical Industry Council software) (and called a TREMCARD) or
- In accordance with SANS 10232-4 (and called a TREC).

The transport emergency card must be written in English, printed on A4 sized paper with a red vertical left and right hand side border of 10mm. It must be clean and legible.



### VALIDITY OF THE TREMCARD!

Either version of the transport emergency card is **only valid for three years** from the generation date. This date is shown on the bottom left hand corner (for CEFIC documents) or the preparation date in the bottom right hand corner of the document (for SANS 10232-4 documents).



### WHERE MUST THE DRIVER'S DOCUMENTS BE CARRIED?

The Dangerous Goods Declaration and the transport emergency card must be kept in the **designated space** in the drivers cab.

The designated space is:

*'A container, of colour orange and marked with the word "DOCUMENTS" in black, that is permanently fixed in a clearly visible space near the centre of the cab so as to be easily accessible from either one of the doors or through a broken front window'.*

**NOTE:** *Only the documents relating to the current load must be kept in the designated space. If documents relating all the different loads for the day are kept in this box, how will the emergency services know what they are dealing with if the driver is not available to answer questions?*

### Vehicle Placards

The **consignor** of the hazardous waste is responsible for supplying the placards or the information regarding the correct placard to the operator. In the waste industry this responsibility has generally been assumed

by the waste companies. Operators should however agree with their clients what information will be used. The format and content of the placard is very specific and is found in SANS 10232-1. Consignors and operators need to ensure that:

- The UN number used is correct for each waste stream that is removed from site. This identifies the substances as per SANS 10228.
- The word WASTE is added above the UN number.
- The correct hazard class warning diamond is used.

An illustration of a placard for a liquid environmentally hazardous substance is



provided below.

The vehicle carrying the wastes must display three of these placards: One on either side of the vehicle and one at the back. A truck and trailer combination with a waste container on the truck and containers on the trailer must display six placards in total.

Another sign required on the vehicle when it is carrying dangerous goods is an orange warning diamond (dimensions provided in SANS 10232-1) fixed to the front of the vehicle. This diamond must be removed if the vehicle is not carrying dangerous goods.

### **Waste Classification Requirements**

SANS 10231-1 requires that a vehicle transporting waste containing any material listed as a dangerous substance (in terms of SANS 10228) exceeding the exempt quantities (as detailed in SANS 10231) carries a **written confirmation** of the waste classification. This information can be included on the Dangerous Goods Declaration.

## **Vehicle Requirements**

### **(1)Registration And Design**

Apart from vehicles being registered with the Department of Transport as dangerous goods carriers, operators need to ensure that they comply at all times with the design and construction requirements. This is referenced in SANS 10318 entitled *Transport of dangerous goods – Design requirements for road vehicles and portable tanks*. This document pertains to the:

- design
- construction
- inspection
- ancillary equipment
- testing and
- marking

This applies to all road vehicles of gross vehicle mass equal to or exceeding 3 500kgs and portable tanks for the transport of dangerous goods as classified in SANS 10228, classes 2 to 9.

The above SANS document refers to **The European Agreement Concerning the International Carriage of Dangerous Goods by Road** (ADR) and states that the requirements of the ADR are to be fully complied with. They are freely available on the following website: [www.unece.org](http://www.unece.org). Operators must ensure they have reviewed the latest edition of this standard to ensure that their vehicles comply.

### **(2)Vehicle Inspections**

SANS 10231:2006 requires that a number of vehicle inspections are carried out. These are listed in Annexure E of the document and include:

- Basic inspection schedule E.1 – minimum requirements given
- Daily inspection schedule E.2 – typical daily inspection schedule provided
- Six monthly inspection schedule E.3 – in-house inspection and roadworthiness schedule requirement given

Operators must have a regular preventative maintenance schedule and keep detailed records for each vehicle. If their vehicles

have undergone major maintenance, then the inspection schedule in E.1 must be restarted from the beginning.

### Transport Incidents

In order for companies to limit their liability in the event of an incident, they need to ensure that they have complied with the relevant legal requirements. Apart from emergency incident management and reporting requirements in terms of the National Environmental Management Act and the National Water Act, there are also reporting requirements for emergency incidents in terms of the National Road Traffic Act and the associated Regulations.



**NATIONAL ROAD TRAFFIC REGULATIONS – R273**  
**DEFINITION**  
**INCIDENT**

*‘An unplanned event during the transportation or storage of dangerous goods which involves leakage or spillage of dangerous goods or risk thereof’*

**SANS 10232-1**  
**DEFINITION**  
**INCIDENT**

*‘Unplanned event during the transport or storage of dangerous goods which includes incidents such as leakage, spillage, fire or other unplanned events’*

SANS 10232-3 requires that a written report (the format is given in Annexure B) is completed and forwarded to the Department of Transport: Dangerous Goods Inspectorate within 24 hours of the incident. The circumstances of the incident will then be investigated. It is important that waste contractors also notify their client if they have had an incident during the transportation of their waste.

### Empty Containers

In terms of SANS 10232-1, a container used for the transport of dangerous goods that has not been cleaned and is not accompanied by a **nominally empty packaging certificate**, is regarded as a dangerous goods waste product.

Companies must ensure that they are aware of the requirements of SANS 10406 in respect of the reprocessing of **previously certified packaging**. They must make sure that they review this document if they generator or manage these wastes.



**SANS 10406**  
**DEFINITION**  
**NOMINALLY EMPTY PACKAGING**

*‘Previously certified packaging from which the contents have been removed as far as possible, by means of the practices commonly employed to remove materials from that type of container, for example pouring, pumping or aspirating’*

*‘Note: Packaging containing residual material of division 6.1 (main or subsidiary hazard in accordance with SANS 10228) is not deemed empty unless it has been triple-rinsed with an effective solvent, or has been cleaned by a method proved to achieve equivalent removal’.*

If drums or containers are being transported for recycling companies need to ensure that they are nominally empty and that a nominally empty certificate is issued for each load of drums or containers sent for re-processing. An example is provided in Annex B of SANS 10406.



**NOTE!**

Re-processing companies should not be accepting drums or containers without these certificates!

When drum reconditioning companies are audited, it is important to check how they manage drums that cannot be reprocessed. This means that you need to determine (and obtain evidence) what they will do with the drums they cannot use and intend to “throw away”. SANS 10406 requires that when packaging containers are being prepared for scrap, the interior and exterior must be cleaned with an effective cleaning agent, or must be thermally neutralised in a reclamation furnace, where appropriate, to remove any foreign matter, residues, labels and decorative coatings. The packaging must then be mechanically or hydraulically crushed.

#### **DID YOU KNOW?**

A packaging reprocessing company must demonstrate compliance with legislation and other publications listed in Annex A of SANS 10406 as well as SANS 14 001. The list in Annex A includes The National Environmental Management Act, the National Road Traffic Act, the National Water Act, the Occupational Health and Safety Act and the DWAF Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste.



### **3.3.16 THE MINIMUM REQUIREMENTS SERIES OF DOCUMENTS**

The Department of Water Affairs and Forestry (DWAF) have produced the following series of guideline documents:

- Doc 1: *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste*
- Doc 2: *Minimum Requirements for Waste Disposal by Landfill* (dealing with the siting, investigation, design, permitting, operation, monitoring and closure requirements for landfills), and
- Doc 3: *Water Monitoring of Waste Management Facilities*.

The 1998 edition of the documents is currently being revised by DEAT as they are now the lead authority with respect to waste management in South Africa. Although these documents have not been incorporated into law, they are used as the basis for landfill and waste facility permitting. These activities are issued a Section 20 permit under the ECA, and the permits make reference to the Minimum Requirements documents. This means that the documents are legally binding on the operators of the landfill site and other waste facilities.

Companies managing wastes need to be aware of these legal requirements. They need to ensure that when they are disposing of hazardous wastes it is done in accordance with the *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste* and thus in terms of the relevant permit conditions as prescribed by the Minister. It is essential therefore that companies have a copy of this document. It can be accessed on the DWAF website as follows:

[http://www.dwaf.gov.za/Dir\\_WQM/docs/Pol\\_Hazardous.pdf](http://www.dwaf.gov.za/Dir_WQM/docs/Pol_Hazardous.pdf) (Accessed Feb 09).

#### **Waste Classification**

The Minimum Requirements classification system requires that wastes are assigned into one of nine classes as defined in SANS 10228 *'The Identification and Classification of Dangerous Goods for Transport'*. The different aspects of Hazardous Waste management, such as packaging, temporary storage, transport, treatment and disposal are all based on the principles of SANS 10228. In this document, hazardous substances are given an identification number and are classified into nine classes as detailed in the following diagram.

## The SANS 10228 Classes and Waste Disposal Restrictions

<b>CLASS 1 = Explosives</b>	Direct disposal of Class 1 wastes is PROHIBITED. Class 1 wastes to be pre-treated (destroyed).
<b>CLASS 2 = Gases</b>	Flammable gases to be thermally destroyed. Non-flammable gases to be released to atmosphere, unless in contravention with the NEMA: Air Quality Act (Act 39 of 2004) and the Montreal Protocol. Controlled destruction of poisonous gases.
<b>CLASS 3 = Flammable liquids</b>	Landfilling of flammable liquids, flashpoint < 61°C is PROHIBITED. Flammable liquids to be treated to flashpoint > 61°C.
<b>CLASS 4 = Flammable solids</b>	Landfilling of flammable solids is PROHIBITED. Flammable solids to be treated to non-flammability.
<b>CLASS 5 = Oxidising substances and organic peroxides</b>	Landfill of Oxidising Substances and Organic Peroxides is PROHIBITED. Treatment to neutralize oxidation potential must be carried out.
<b>CLASS 6 = Toxic and infectious substances</b>	Toxic substances to be disposed subject to correct landfill site depending on the hazard rating. Infectious substances to be sterilised/incinerated and residue to be disposed subject to correct landfill site depending on the hazard rating.
<b>CLASS 7 = Radioactive substances</b>	Radioactive Substance with specific activity < 100 Bq/g, total activity < 4 kBq, to be incinerated or landfilled. Disposal of Radioactive Substance with specific activity > 100 Bq/g, total activity > 4 kBq, is PROHIBITED. Consult Department of Health.
<b>CLASS 8 = Corrosives</b>	Disposal of Corrosive Substance, pH < 6 and/or pH > 12, by landfill is PROHIBITED. Corrosive Substance to be treated to pH 6-12.
<b>CLASS 9 = Miscellaneous dangerous goods and substances</b>	Competent authority to be consulted and written approval to be received before disposal.

Source: Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2005 draft)

These nine SANS classes relate primarily to transportation, taking into account only the danger to humans. The *Minimum Requirements* classification system extends SANS 10228 to take into account the potential hazard of the waste to the ecosystem, and especially groundwater. As can be seen from the above diagram various types of treatment may be necessary before certain classes of waste may be landfilled.

## Hazard Ratings

Determining the class is only the first step in the classification process. The second step assigns the waste to a hazard rating in terms of the *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste*. The reason for this is to determine the degree of hazard that the waste poses to the environment.

### HAZARD RATINGS

#### HR 1 = Extreme Hazard

Significant concentrations of extremely toxic substances, including carcinogens, teratogens, & mutagens

#### HR 2 = High Hazard

Highly toxic characteristics or extremely toxic substances which are not persistent

#### HR 3 = Moderate Hazard

Moderately toxic substances or those that are potentially harmful to health or the environment but not persistent

#### HR 4 = Low Hazard

Often occurring in large quantities & contain potentially harmful substances that would present a limited threat to the environment

These hazard ratings are important as they inform the generator of the class of landfill site in which a hazardous waste must be disposed.

### HH or Hh Disposal?

**HR 1, HR 2, HR 3 and HR 4** can be disposed of at a HH landfill site.

An Hh landfill site can only accept **HR3 and HR 4** waste.

The hazard ratings are obtained by assessing at the lethal dose (LD) and lethal concentrations (LC) values of the

constituents in the waste. These values represent the concentration of a hazardous substance which would kill 50% of a population of rats (LD<sub>50</sub>) or fish (LC<sub>50</sub>) under controlled conditions. They therefore predict the toxicity of a hazardous substance.

LD<sub>50</sub> values = Acute mammalian toxicity values =

LC<sub>50</sub> values = Acute ecotoxicity values

The *Minimum Requirements* provide tables assigning the above values into hazard ratings (HR). The tables below show the hazard ratings (HR) and concentrations in parts per million (ppm) in terms of predicted toxicity.

MAMMALIAN TOXICITY			
HR	LD <sub>50</sub> (Oral) ppm	LD <sub>50</sub> (Dermal) ppm	LD <sub>50</sub> (Inhalation) ppm
HR1	<5	<40	<0.5
HR2	5-<50	40-<200	0.5-<2
HR3	50-<500	200-<2000	2-<10
HR4	500-<5000	>2000	>10
ECOTOXICITY			
HR	LC <sub>50</sub> ppm		
HR1	<1		
HR2	1-<10		
HR3	10-<100		
HR4	100-<1000		

Once wastes have been assigned into a specific hazard rating, they can then be assessed to see if they delist to a lower hazard rating.

### Delisting

Delisting is a complex process and this section will help to explain the terminology involved in the process. Delisting calculations can be performed by the landfill site that is accepting the waste or by an independent laboratory with the relevant expertise. It is important to note that waste is delisted to a **particular landfill** site only.



### **CAUTION!**

If a generator has a waste that contains a mixture of chemicals, the hazard rating of the waste is always based on the most toxic chemical in the waste. This is universally known as the precautionary principle.

For example: waste fluorescent tubes contain only a comparatively small amount of mercury which is a HR1 substance. The waste stream must therefore be sent to a HH site. This waste can be treated for disposal on an Hh site but only if the landfill site has written approval to do this.

Delisting is the process used to assign a hazardous substance in a waste stream to a lower risk group or hazard rating (for example from HR2 to HR4) or to a 'non-risk' group (for example from HR2 to a general site with leachate collection systems.). It does not become a non-hazardous compound, but the associated risk is reduced. Delisting involves reviewing the following:

- The concentration of the hazardous substances in the waste stream
- The toxicity of the hazardous substance
- The monthly volume of the waste stream for disposal
- The total amount of hazardous substances that will be disposed on the landfill site each month
- The size of the landfill site where the waste will be disposed

All these values are used to calculate two factors:

**Acceptable Risk Level (ARL) [also referred to as Acceptable Exposure (AE)]:** is a factor based on the LC<sub>50</sub> (lethal concentration) value of the hazardous substance.

It represents the risk to the environment that has been deemed acceptable. This is the concentration at which the hazardous substance is predicted to the death of one in three hundred thousand fish in an aquatic environment.

**The Estimated Environmental Concentration (EEC):** the theoretical amount of hazardous substance that will leach and migrate from the site for an indefinite period of time. It takes into account the total amount of the hazardous substances that will be disposed of each month on one hectare of the landfill site.

**The EEC is compared to the ARL [AE] for delisting purposes.**

When the EEC is less than the ARL [AE] the hazardous substances with a HR2, HR3 and HR4 can delist to a general waste category. This means that they can be disposed of at a general waste landfill site with a leachate collection system. Note: This is subject to written approval by DEAT.

To delist a HR1 hazardous substance the EEC must be less than 10% of the ARL [AE] value.

There may be opportunities for generators to delist their waste stream by pre-treatment. For example, some metals may be treated with lime to form metal hydroxides which are less soluble in the environment. They will then not leach as readily from the landfill site and pose less of a risk to the environment.

After the waste has been treated, the laboratory may perform a **toxicity characteristic leaching procedure test** (TCLP) on the waste. This will determine how much of the hazardous substance 'leaches' out of the waste stream. It is designed to replicate conditions in a landfill and therefore predict the fate of the waste when it is landfilled.

Using the TCLP test results, the **Estimated Environmental Concentration** value is compared with the **Acceptable Risk Level [AE]** and if less, the waste stream may be able to delist.

It is important to note that if the generator's waste is disposed at lower category landfill sites due to a successful delisting, written proof that the landfill site has been authorised to accept that waste must be retained on file.

For example, if a generator had a HR1 waste such as fluorescent tubes, they would have to dispose of these to a HH landfill. If, however, they or the landfill operator applied appropriate treatment technologies the waste may delist to an Hh landfill site. In this case, the generator needs to ensure that the landfill site permit states that this waste stream can be accepted. If not, a permit amendment authorising the disposal of this waste stream may be obtained by the landfill operator from DEAT. The generator will need to obtain a copy of this authorisation for their records.

Similarly, if hazardous waste has been delisted to a general waste landfill site, the generator needs to ask for a copy of the landfill site permit amendment authorising this disposal.

The generator must always ask for a copy of the waste classification report from the landfill site if they have not done the work themselves. The report must detail the EEC and ARL [AE] values and state the final hazard rating of the waste with recommendations for delisting if appropriate.



### **THE TOTAL LOAD CONCEPT**

The landfill site operator cannot perform individual delisting calculations without looking at the combined effect of all the hazardous substances on the landfill site.

The operator needs to determine the total amount of a substance that can be disposed of at a landfill before the site may no longer accept more of that substance. For example, if the site has reached the monthly limit for mercury, it can no longer accept waste streams containing mercury for that particular month.



### **REVIEW OF TERMINOLOGY**

**Group I, II, III and IV substances:**

Classification of different substances in terms of the Hazardous Substances Act – not used in waste classification

**SANS Classes:**

Nine different classes as detailed in SANS 10228 – first step in the waste classification process

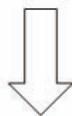
**Hazard Ratings:**

Four different hazard ratings used for classification - as detailed in the *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste*.

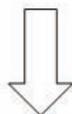
## WASTE CLASSIFICATION STEPS



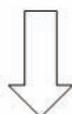
Identification of waste as potentially hazardous



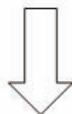
Sampling and analysis –  
Waste properties, characteristics and constituents



Classification in terms of SANS 10228 - Nine Classes



Determination of hazard ratings according to the  
Minimum Requirements and classification for disposal



Treatment and delisting – written approval from DEAT

### **REMINDER!**

Regulation 9A of the HCS Regs requires that companies have a 16 point (headings) MSDS to cover the HCS that they handle. From a waste perspective this MSDS contains information important to the classification process such as points:

- 14 - SANS Class
- 9 - Physical and Chemical Properties
- 10 - Stability and Reactivity
- 11 - Toxicological Information (mammalian) – LD<sub>50</sub> values
- 12 - Ecological Information (environmental toxicity) – LC<sub>50</sub> values
- 13 - Disposal considerations (these are normally international requirements depending on the source of the MSDS)



### 3.3.17 PROVINCIAL LEGISLATION – KWAZULU-NATAL

It is important to check with the local provincial department that deals with environmental matters if there is any provincial legislation that deals with waste management issues. Some of the provincial legislation is very old, but some provinces are in the process of promulgating new environmental legislation. The Department of Agriculture and Environmental Affairs (DAEA) produced a draft KwaZulu-Natal Policy on Waste Management which was published in GN 9 on the 28<sup>th</sup> August 2003. DAEA is also in the process of developing the KwaZulu-Natal Prevention and Management of Waste Bill and associated regulations.

### 3.3.18 THE eTHEKWINI REFUSE REMOVAL BYLAWS MN 47 OF 2002

It is important to consult the local bylaws in as they contain a number of requirements with which they need to comply. The

eThekwini Refuse Removal Bylaws (MN 47 dated 17 October 2002) are applicable to industries operating within the eThekwini Municipality. A significant section of the bylaws deals with the services provided by the local authority. Requirements relating to the eThekwini's disposal sites are also detailed. An example is that liquids may not be disposed on the Council's landfill sites unless prior written permission is received from the Head of Department (HOD) of Durban Solid Waste.

Waste generators need to be aware that bylaws require them to store their waste in suitable containers which are kept maintained. They may not allow the waste to accumulate to the extent that it creates nuisance conditions. The bylaws also deal with *special industrial refuse* which may be either liquid or sludge wastes that cannot be discharged into the sewer system.

There are a number of administrative actions that **generators** need to take to comply with these bylaws.



#### ACTIONS TO TAKE:

##### **Use of Waste Contractors**

If generators are using a waste contractor instead of the Council's service Section 2(7) requires that they notify the Head of Department in writing of this fact and also when they stop using that particular contractor. Note that Section 2(6) prohibits generators from using a waste contractor that is not approved by the Council.

##### **Recycling Activities**

If waste generators are recycling wastes, Section 4(a)(i) requires that they need the written permission of the Head of Department, for selling or otherwise disposing of corrugated cardboard, paper, glass or other material being an element of trade refuse, for recycling in a manufacturing process. The Medical Officer of Health's consent is also needed if they send any food wastes for animal consumption.

##### **Special Industrial Refuse (Liquids and sludges)**

If generators dispose of any special industrial waste, Section 15 requires that you inform the Head of Department in writing about the:

- composition
- quantity
- storage arrangements
- as well as how, when, where to and by whom it will be removed

Any changes to the above information must be communicated in writing to the Head of Department.

There are a number of administrative actions that **waste contractors** need to take to comply with these bylaws.



### **ACTIONS TO TAKE WITH RESPECT TO THE REFUSE REMOVAL BYLAWS:**

#### **Registration of Waste Contractors**

Section 2(3) requires that trade and industrial refuse may only be collected and removed from premises by a contractor approved in writing by the HOD for the purpose. Application for approval as a refuse removal contractor must be made to the HOD and it is also noted that this approval can be withdrawn by the HOD at any time. The approval may be granted or refused at the discretion of the HOD and shall be subject to a number of conditions such as: the period of validity and the type of refuse which may be managed.

#### **Recycling Activities**

If waste contractors are recycling wastes Section 4(a)(i) states that written permission of the HOD, for selling or otherwise disposing of corrugated cardboard, paper, glass or other material being an element of trade refuse, for recycling in a manufacturing process is required. The Medical Officer of Health's consent is also needed if any food wastes are sent for animal consumption.

#### **Removal of Special Industrial Refuse (Liquids and sludges)**

Section 17(1) prohibits any person from removing special industrial refuse from premises on which it is generated without the written consent of the HOD. In giving this consent, the HOD must be satisfied that the person is competent and has the necessary equipment to carry out the removal. Section 15(1) stipulates that the HOD may request that they are informed from time to time as to the removal of special industrial refuse, the identity of the remover, the date of such removal, and the quantity and the composition of the special industrial refuse removed.

#### **Builder's Refuse**

Section 11(1) requires that all builders' refuse is deposited at the Council's disposal sites unless it is disposed of for the purpose of reclamation of land but only if prior written approval from the HOD has been obtained.

### **3.3.19 THE ETHEKWINI SEWAGE DISPOSAL BYLAWS MN 27 OF 1999**

Although the focus of this guideline is not on effluent, a permit is needed to discharge effluent other than normal domestic wastewater in terms of the eThekweni Sewage Disposal Bylaws (MN 27 of 1999). This permit is called a Trade Effluent Discharge Permit.

Trade effluent is defined as:

*Any liquid whether or not containing matter in solution or suspension which is given off in the course of or as a result of any industrial, trade, manufacturing, mining or chemical process or any laboratory, research or agricultural activity, and includes any liquid other than standard domestic effluent or stormwater'.*

If companies you audit are conducting any activities that require the discharge of trade effluent to sewer, they need to ensure that they have a valid permit for this effluent discharge.

In addition to the generators may need to discharge effluent by road haulage to the eThekweni Municipality Southern Works facility (sea outfall). In this instance both the generator and the appointed waste haulier must have the written permission from eThekweni Water and Sanitation to undertake this activity.

### **3.3.20 THE ETHEKWINI SCHEDULED TRADE AND OCCUPATIONS BYLAWS MN 134 OF 1979**

The Scheduled Trade and Occupations Bylaws (MN 134 of 1979) deal with permit requirements relating to a number of Trades and Occupations as detailed in Schedule A of the Bylaws. These permits have detailed requirements relating to a number of waste issues. Schedule A includes the following Trade and Occupation:

*Refuse collection, storage, removal, processing or disposal.*

All waste contractors therefore need to ensure that they have obtained a Scheduled Trade Permit if they operate within the eThekweni Municipality.

### **3.3.21 THE NEW ETHEKWINI PERMITTING SYSTEM**

The eThekweni Water and Sanitation (EWS) and Health Department's are introducing a new permitting process for Scheduled Trades (in terms of the Scheduled Trade and Occupations Bylaws) and Trade Effluent (in terms of the Sewage Disposal Bylaws). The application process is very comprehensive and will result in permits being valid for five years (previously a one year validity applied). Although the permit application forms are the same, two separate permits will still be issued.

One of the requirements of the application process is that it will be mandatory for companies to establish an Environmental Management System (EMS). Five-year

Environmental Improvement Programs will also be required and in order to retain the permit, companies will be audited against your Environmental Management System and Improvement Plans.

Waste issues are a key component of the application process and permit conditions contain a number of reporting responsibilities with which companies will be expected to comply in order to retain their permit. Some of the waste requirements are:

- Identification of waste streams
- Classification of wastes and which type of disposal site is required (General, HH or Hh)
- Reporting of waste volumes per waste type
- Brief description of main pollutants and estimated concentration ranges present in each waste stream (including how the pollutant is generated and appropriate analytical reports where necessary)
- Details of any on-site waste treatment measures
- Waste storage and handling arrangements, including control measures
- Waste reduction measures
- Toxicity testing if required (for sea outfall disposal)
- Details on points of disposal for all waste types including the business entities involved
- Record keeping system to cover cradle-to-grave responsibilities
- Details on procedures, training, etc.

### **3.3.22 THE INTERIM CODE RELATING TO FIRE PREVENTION AND FLAMMABLE LIQUIDS AND SUBSTANCES PN 5417 OF 2000**

If companies store hazardous wastes which are flammable, they must ensure that these volumes are taken into account in the calculations submitted in your application for what is commonly known as a Certificate of Registration. This Certificate is issued in terms of eThekweni's Interim Code Relating to the Fire Prevention and Flammable

Liquids and Substances (PN 5417 of March 2000).

In terms of this code companies cannot store in excess of the following volumes of flammable liquids and substances unless they have a Certificate of Registration issued by eThekweni Fire and Emergency Services:

- Class 0 = LPG = 48 kg
- Class I Flammable Liquid = 200 ℓ
- Classes II and III Flammable Liquids = 400 ℓ
- Flammable substances = a quantity specified by the Chief Fire Officer.



**INTERIM CODE DEFINITION:  
CLASSES OF FLAMMABLE LIQUIDS  
AND SUBSTANCES**

**"Flammable Liquid or Substance"** means any substance that is readily ignited or any Flammable Liquid;

**"Class 0 Flammable Liquid"** means Liquefied Petroleum Gas;

**"Class I Flammable Liquid"** means a liquid that has a closed cup flash point below 21°C;

**"Class II Flammable Liquid"** means a liquid that has a closed cup flash point from 21°C up to and including 55°C;

**"Class III Flammable Liquid"** means a liquid that has a closed cup flash point from 55°C up to and including 100°C

When companies apply for their permit, they should develop an inventory of flammable materials stored on-site and should not forget to include their flammable wastes when calculating these figures such as waste oils and solvents.

Incidents that may arise from the storage of flammable wastes in the storage areas should also be included in companies' Emergency Response Procedure.

Waste contractors that use their vehicles to transport flammable wastes must have a

**Certificate of Registration** for each vehicle that they use for this purpose.

In terms of the bylaws no vehicle is permitted to carry flammable substances in excess of the following amounts unless the vehicle has a Certificate of Registration:

- Class I Flammable Liquid = 200 ℓ
- Class II Flammable Liquid = 400 ℓ
- Class III Flammable Liquid = 600 ℓ

Waste contractors must ensure that they carry these Certificates on their vehicles and that they comply with the conditions on the Certificate.

### **3.3.23 THE NATIONAL ENVIRONMENTAL WASTE MANAGEMENT BILL OF 2007**

The development of new waste management legislation is currently being finalised. This legislation is based on the White Paper for Integrated Pollution and Waste Management for South Africa (GN 227, GG 20978 of 17<sup>th</sup> March 2000). The Draft National Environmental Management: Waste Management Bill was published for public comment on GN 1832, GG 29487 of 12<sup>th</sup> January 2007. When the act is finalised and promulgated Sections 19, 19A, 20, 24, 24A and 24B of the Environment Conservation Act will be repealed.

Although the act has not been finalised, this section will highlight some of the more important aspects of the act that will have an impact on waste generators and contractors. Version B39D of 2007 of the Bill has been used for reference purposes. Under the proposed act, **various waste management activities may need to be licensed.**

These include:

- Importation and exportation of waste;
- Generation of waste, including the undertaking of any activity or process which will result in the generation of waste;
- Accumulation and storage of waste;
- The collection and handling of waste;
- Reduction, reuse, recycling and recovery;
- Trading in waste;
- Transportation of waste;

- Transfer of waste;
- Treatment of waste; and
- Disposal.

Schedule 1 of the proposed act includes a number of categories of activities that will require a waste management licence. Activities that may apply to certain generators include:

#### **Category A (some extracts)**

##### **Storage and transfer of waste**

(1) *The temporary storage of general waste at a facility, including a waste transfer facility and container yard, that has the capacity to receive in excess of 30 tonnes of general waste per day or that has a throughput capacity in excess of 20 m<sup>3</sup> per day, including the construction of a facility and associated structures and infrastructure for such storage.*

(2) *The temporary storage of hazardous waste at a facility, including a waste transfer facility and container yard, that has the capacity to receive in excess of 3 tonnes of hazardous waste per day, including the construction of a facility and associated structures and infrastructure for such storage.*

##### **Recycling and recovery**

(3) *The sorting and shredding of general waste at a facility that has the capacity to receive in excess of 1 ton of general waste per day, including the construction of a facility and associated structures and infrastructure for such sorting or shredding.*

(4) *The recovery of waste, excluding recovery that takes place as an integral part of an internal manufacturing process, at a facility that has the capacity to receive in excess of 3 tons of general waste or 100 kg of hazardous waste per day, including the construction of a facility and associated structures and infrastructure for such recovery.*

##### **Treatment of waste**

(6) *The biological, physical or physicochemical treatment of hazardous waste or the autoclaving, drying or microwaving of hazardous waste, including the construction of a facility and associated structures and infrastructure for such treatment.*

(7) *The treatment of waste in sludge lagoons.*

#### **CATEGORY B (some extracts)**

##### **Treatment of waste**

(1) *The treatment of general waste by a method other than biological, physical or physicochemical treatment at a facility with the capacity to receive in excess of 10 tonnes of general waste per day, including the construction of a facility and associated structures and infrastructure for such treatment.*

(2) *The treatment of hazardous waste by a method other than biological or physicochemical treatment, including the construction of a facility and associated structures and infrastructure for such treatment.*

(3) *The incineration of waste, including the construction of a facility and associated structures and infrastructure for the incineration of waste.*

##### **Disposal of waste on land**

(4) *The disposal of hazardous waste to land, including the construction of a facility and associated structures and infrastructure for such disposal.*

**Section 7** tasks the Minister (of DEAT) with **establishing national norms and standards** for:

- The classification of waste
- The planning for and provision of waste management services
- The storage, treatment and disposal, including the planning and operation of waste treatment and waste disposal facilities

He/she may also establish norms and standards for:

- Waste reduction, reuse, recycling and recovery
- Extended Producer Responsibility
- The regionalisation of waste management services
- The remediation of contaminated land and soil quality.

**Section 14** allows the Minister to declare **priority wastes** which may be a threat to the environment. Special measures to deal with these declared priority wastes will be introduced.

**Section 16** details a number of **general duties in respect of waste management**.

The holder of waste must take all reasonable measures to:

- Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated
- Reduce, reuse, recycle and recover waste
- Where waste must be disposed of, to ensure that the waste is treated and disposed of in an environmentally sound manner
- Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts
- Prevent any employee or person, under his or her supervision from contravening a provision of this Act
- Take reasonable measures to prevent the waste from being used for an unauthorised purpose

In addition, any person who sells a product that may be used by the public and which will result in the generation of hazardous waste must take reasonable steps to inform the public of the impacts of that waste on human health and the environment.

**Section 17** deals with **reduction, re-use, recycling and recovery of waste** and requires that **any person who undertakes** an activity involving the reduction, re-use, recycling or recovery of waste must, before undertaking that activity, ensure that the reduction, re-use, recycling or recovery of the waste-

- uses less natural resources than disposal of such waste; and
- to the extent that it is possible, is less harmful to the environment than the disposal of such waste.

**Section 21** deals with **general requirements for the storage of waste**.

Any person who stores waste must at least

take steps, unless otherwise authorised in terms of this Act, to ensure that:

- The containers in which any waste is stored are intact and not corroded or in any other way rendered unfit for the safe storage of waste
- Measures are taken to prevent accidental spillage or leaking
- The waste cannot be blown away;
- Nuisances such as odour, visual impacts and breeding of vectors do not arise
- Pollution of the environment and harm to health are prevented

**Section 24** requires that **waste can only be collected by persons authorised by law** and **Section 25** prescribes **duties of transporters**.

**Section 26 prohibits the unauthorised disposal of waste** and states that no person may:

- Dispose of waste, or knowingly or negligently cause or permit waste to be disposed of in or on any land, waterbody or at any facility unless the disposal of such waste is authorised by law
- Dispose of waste in a manner likely to cause pollution of the environment or harm to health and well-being.

**Section 28** allows the Minister to direct industry to prepare **industry waste management plans**. These may be requested from any person falling within a category of persons or industries or generators of a particular waste.

**Sections 35 to 42** deals with **contaminated land**, including the assessment and remediation thereof.

The proposed act also requires that a **Waste Information System** is developed by DEAT. Local provincial environmental departments may also carry out this function.



## NATIONAL ENVIRONMENTAL WASTE MANAGEMENT BILL DEFINITION: WASTE

“Waste” means any substance, whether or not that substance can be reduced, reused, recycled and recovered, that –

- (i) is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- (ii) the generator has no further use of – for the purposes of production, reprocessing or consumption;
- (iii) that must be treated or disposed of; or
- (iv) is identified as a waste by the Minister and includes waste generated by the mining, medical or other sector,

Provided that a by-product shall not be considered to be waste and provided further that any portion of waste once reduced, reused, recycled and recovered ceases to be waste”

### DEFINITION: BY-PRODUCT

“By-product” means a substance which is produced as part of a process which is primarily intended to produce another substance or product and which has the characteristics of an equivalent virgin product or material



## PROPOSED TRANSPORTER DUTIES IN TERMS OF SECTION 25 OF THE NATIONAL ENVIRONMENTAL WASTE MANAGEMENT BILL

Section 25(1) deals with the registration of waste transporters.

Section 25(2) Any person engaged in the transportation of waste must take all reasonable steps to **prevent any spillage of waste or littering from a vehicle** used to transport waste.

Section 25(3) Where waste is transported for the purposes of disposal, a **person transporting the waste must, before offloading the waste from the vehicle, ensure that the facility or place to which the waste is transported is authorised to accept such waste.**

Section 25(4) Where hazardous waste is transported for purposes other than disposal, a **person transporting the waste must, before offloading the waste from the vehicle, ensure that the facility or place to which the waste is transported is authorised to accept such waste and must obtain written notification that the waste has been accepted**

Section 25(5) In the absence of evidence to the contrary which raises reasonable doubt, a person who is in control of a vehicle, or in a position to control the use of a vehicle which is used to transport waste for the purpose of offloading that waste, is deemed to **knowingly cause such waste to be offloaded at the location where the waste is deposited.**

## SOME RELEVANT LEGAL REQUIREMENTS FOR WASTE STORAGE

Leaking containers on site  
Pollution to environment – soil, stormwater, groundwater

Prevention of pollution duties:

- National Water Act 36 of 1998
- National Environmental Management Act 107 of 1998
- Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste
- Local bylaws

Allowing leaking / overfull / damaged containers filled with hazardous waste off-site

Potential incident liabilities under:

- National Water Act 36 of 1998
  - National Environmental Management Act 107 of 1998
  - National Road Traffic Act of 1996
- Contravention of consignors duties in terms of:
- National Road Traffic Act of 1996
  - The National Road Traffic Regs, 2000
  - SANS 10231-1

Windblown litter not contained within the facility

Control of litter:

- Environment Conservation Act 73 of 1989

Unhygienic conditions on site due to waste

- National Health Act 61 of 2003
- Health Act 63 of 1977
- Local bylaws

Protection of health and safety of employees, contractors and waste contractors

Provision of a safe work environment

- Occupational Health and Safety Act 85 of 1993

Provision of MSDS

- Hazardous Chemical Substances Regs, 1995

Correct labelling for storage (and transportation) of hazardous wastes

- Hazardous Chemical Substances Regs, 1995
- Asbestos Regs, 2001
- Lead Regs, 2001
- Hazardous Biological Agents Regs, 2001
- National Road Traffic Act of 1996
- The National Road Traffic Regs, 2000
- SANS 10228 and 10229-1

Storage date labelling for hazardous waste – If you don't label your containers how will you demonstrate compliance with the 90 day storage limit for hazardous wastes?

- Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste

Permitting requirements for storage of wastes on site

- Environment Conservation Act 73 of 1989
- Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste
- Local bylaws



## SECTION 20 PERMITS UNDER THE ENVIRONMENT CONSERVATION ACT

The *DWAF Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste* set limits on the time period that **hazardous waste** can be stored. This can be done without a permit for **less than 90 days**. Furthermore, this storage is linked to the volumes and the toxicity of the waste. The more toxic the waste, the less the amount that can be stored without a permit

The following quantities of hazardous waste may be stored on-site for 90 days or less without a permit:

**Hazard Rating 1:** 10 kg

**Hazard Rating 2:** 100 kg

**Hazard Rating 3:** 1000 kg

**Hazard Rating 4:** 10 000 kg

If the storage time limits cannot be met, generators need to apply to Department of Environmental Affairs and Tourism (DEAT) for **a permit in terms of Section 20(1)** of the Environment Conservation Act, or an exemption from this requirement.



## SECTION 20 PERMITS UNDER THE ENVIRONMENT CONSERVATION ACT

Section 20(1) of the ECA states that *'no person shall establish, provide or operate any disposal site without a permit issued ...'* The ECA definition of disposal site is *'a site used for the accumulation of waste with the purpose of disposing or treatment of such waste'*. Therefore in terms of this definition, waste management facilities are required to have a S20 permit or an exemption.

Included for your information in Annexure Two is the *DWAF Policy on the Definition of Disposal Sites with regard to the Issuing of Permits for Waste Incinerators, Waste Management Facilities and Other Alternative Waste Disposal Technologies and Related Guidelines*. This policy document states that: *The land on which an **incinerator / transfer station / waste recycling plant / treatment facility / waste storage area** is established / installed, can thus be regarded as a disposal site for which a permit should be issued in terms of the mentioned Act.*

There may be some instances where storage and accumulation of wastes in a central area at a generator's facility may require a Section 20 permit or an exemption. Generators are advised to check with the DEAT in this respect. They should ensure that all communications are in writing and that records of responses from DEAT are kept on file.

Annexure Three contains a useful DWAF Policy resource entitled *'Procedure with regard to the issuing of Exemptions under Section 20 of The Environment Conservation Act, 1989 (Act 73 of 1989)'*

## IMPORTANT LEGAL REQUIREMENTS – INCIDENT REPORTING SUMMARY

As you may have noticed, there are a number of pieces of legislation that require the reporting of incident and that detail actions to be taken in the event of an incident. ***It is important that you companies take note of these requirements and that they incorporate them into their procedures.***

### **NATIONAL ENVIRONMENTAL MANAGEMENT ACT** **SECTION 30 – EMERGENCY INCIDENTS**

#### **Section 30(3) Immediate reporting of :**

- The nature of the incident;
- Any risks posed by the incident to public health, safety and property;
- The toxicity of substances or by-products released by the incident; and
- Any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment

Reporting to:

- The Director-General (DEAT);
- The South African Police Services and the relevant fire prevention service;
- The relevant provincial head of department or municipality; and
- All persons whose health may be affected by the incident.

#### **Section 30(4) Action to be taken** as soon as reasonably practicable:

- All reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;
- Undertake clean-up procedures;
- Remedy the effects of the incident;
- Assess the immediate and long-term effects of the incident on the environment and public health.

**Section 30(5) Follow up action** – within **14 days of the incident**, report to the Director-General, provincial head of department and municipality information to enable an initial evaluation of the incident, including-

- The nature of the incident;
- The substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;
- Initial measures taken to minimise impacts;
- Causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and
- Measures taken and to be taken to avoid a recurrence of such incident.

### **NATIONAL WATER ACT** **SECTION 20 – EMERGENCY INCIDENTS**

#### **Section 20(3) Immediate reporting to:**

- The Department
- The South African Police Service or the relevant fire department or
- The relevant catchment management agency (or DWAF if there is no CMA).

#### **Section 20(4) Immediate action:**

- Take all reasonable measures to contain and minimise the effects of the incident
- Undertake clean-up procedures
- Remedy the effects of the incident
- Take such measures as the catchment management agency may either verbally or in writing direct within the time specified by such institution

**NATIONAL ROAD TRAFFIC ACT AND SANS 10232-2**

**Incident:** Unplanned event during the transportation and storage of dangerous goods which involves leakage or spillage or the risk thereof.

**First Responder:** First person to arrive at the scene of an incident who is able to correctly identify the goods and hazards, and to communicate with an emergency service either directly or through a base station.

**Annexure B Report (in SANS 10232-2)** to be completed and signed by First Responder and forwarded to the Department of Transport within 24 hrs of the incident occurring.

**GENERAL ADMINISTRATIVE REGULATIONS OF 2003 PROMULGATED IN TERMS OF THE OHSACT TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT (OHSA)**

***R8 : Reporting of Incidents and Occupational Diseases***

The following incidents must be reported (on a WCL1 or WCL2 form) to the Provincial Director (Department of Labour) **within 7 days of occurrence** on a WCL1 or WCL2 form-

- A major incident
- The health or safety of any person was endangered and where:
  - a dangerous substance was spilled
  - or the uncontrolled release of any substance under pressure took place

*Major incident means an occurrence of catastrophic proportions, resulting from the use of plant or machinery, or from activities at a workplace (S1 of the OHSA)*

**SEWAGE DISPOSAL BYLAWS MN 27 of 1999 (eTHEKWINI)**

**Section 4.12:** Non-conforming discharges must be reported to eThekweni Water and Sanitation (giving reasons) **within 12 hours of the incident occurring.**

**THE INTERIM CODE RELATING TO FIRE PREVENTION AND FLAMMABLE LIQUIDS AND SUBSTANCES PN 5417 of 2000(eTHEKWINI)**

**Section 48:** If you have a fire or accident on-site involving a flammable substance that caused damage to property or injury to persons you have to report this to the Chief Fire Officer.

**Don't forget about incident reporting responsibilities in terms of the various authorisations / permits that you hold!**

## CHAPTER FOUR: AUDITING

## SUMMARY

- Types of environmental audits***
- Baseline audit
  - Internal environmental audit
  - Legal compliance audit
  - An audit conducted by an independent organisation – certification or surveillance audit
  - Supplier audit
  - Environmental due diligence audit
  - Environmental impairment liability audit
  - Regulator audit
- Pre-site activities***
- Audit scope and objectives
  - Audit criteria
  - Planning the audit
- Conducting the audit***
- Opening meeting
  - On-site audit – documentation review and verification, interviews, sampling, photographic evidence
  - Closing meeting
- Post-audit activities***
- Post audit review
  - Writing the audit report
  - Post audit follow up
  - Quality assurance and record keeping
  - Assessment of audit process
- Selecting the auditors***
- Skills required
  - Personal attributes required

## 4.1 GENERAL

The authorities are responsible for ensuring compliance with legal requirements for waste management. A pro-active way in which to fulfil this mandate is for officials to participate in audits of the various roles players in the waste industry, including the generators of the waste.

The new eThekweni permitting system for Scheduled Trade and Trade Effluent Permit is taking this approach. These new permits will require that each company establish and implement an Environmental Management System (EMS). As part of this EMS, five-year Environmental Improvement Programs will need to be developed. In order for the company to retain the permit, the eThekweni officials will be auditing each company against their EMS and Improvement plans. This Chapter is intended to enhance the skills of the various officials that will be tasked with the auditing process. It is noted, however that the document focuses on waste management issues.

### WHAT IS AN AUDIT?

The International Chamber of Commerce (ICC, 1991) defines environmental auditing as:

“...A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of contributing to safeguarding the environment by:

- facilitating management control of environmental practices; and
- assessing compliance with company policies, which would include meeting regulatory requirements...”

Source: DEAT (2004) *Environmental Auditing, Integrated Environmental Management, Information Series 14, Department of Environmental Affairs and Tourism (DEAT), Pretoria.*



## 4.2 THE TYPES OF ENVIRONMENTAL AUDITS

There are many different types of environmental audits. Some are described below:

- A **Baseline Audit** conducted by a company with the intention of identifying potential liabilities, risks and hazards. This may be done prior to the development and implementation of an EMS.
- An **Internal Environmental Audit** conducted by the company's own staff with the intention of evaluating the level of compliance with the company's EMS and its effectiveness. This audit is used as a basis for continual improvement.
- A **Legal Compliance Audit** (either external or internal) is used to evaluate the company against the environmental legal requirements that pertain to their operations. This may be conducted by the company or it may be conducted by an external consultant
- An **audit conducted by an independent organisation – Third Party Audit** (for example the South African Bureau of Standards) to assess the organisations compliance with the ISO 14 001 EMS and to recommend them for certification (**Certification Audit**). If they are already certified, to verify that they are still compliant (**Surveillance Audit**)
- A **Supplier Audit** where the client audits their supplier to evaluate their environmental compliance. The audit results can be used to: evaluate potential liabilities associated with using the supplier; to evaluate contractual commitments of the supplier; or to assist the supplier in meeting the required environmental performance of the client.
- An **Environmental Due Diligence Audit**, where the company is assessed for actual or potential environmental liabilities. This is usually normally carried out by an independent consultant on behalf of a potential purchaser.

- An **Environmental Impairment Liability Audit**, where companies seeking insurance cover for pollution incidents may be audited by the insurers who need to assess their potential risk.
- A **Regulatory Audit**, where the company is assessed by a government official for compliance with legal requirements and permit conditions.

#### **COMMITMENT TO COMPLIANCE**

*It is important that companies have a systematic approach to achieve and maintain compliance with legal and other requirements. This should be in the form of an Environmental Management System (EMS). This system must include the implementation of policies and procedures to address and manage the impact of their operations on the environment.*



### **4.3 THE AUDIT PROCESS**

It is important to understand that audit activities are not restricted to the site visit. Careful and thorough planning before going to the facility and off-site evaluation are just as critical to the audit's success as the site inspection. The audit involves tasks that can be grouped into pre-, on- and post-site visit activities.

**Compliance audits** are essential tools for waste generators, contractors and regulators alike. Audits by regulatory authorities can be used to achieve the following objectives:

- Ensuring that the environmental aims of the Constitution (an environment that is not harmful to health and well being and sustainable development) are achieved
- Maintaining the integrity of the regulatory system (legislation and bylaws)
- Improving awareness of and compliance with legal requirements
- Enforcing the law in a consistent and transparent manner

The audit process should:

- **Assess compliance** with applicable legislation
- **Review authorisations** issued to the organisation. Examine the activities that may have an environmental impact, to determine if they are adequately covered by the regulatory instruments. Assessing their conditions or criteria for appropriateness, consistency, enforceability and the degree of environmental protection they afford
- **Report findings** and **develop an action plan** with associated timeframes to address any non-compliances identified
- **Communicate findings** to the organisation and other stakeholders as required
- **Review progress** in addressing the action plans within the agreed timeframe.

### **4.4 PRE-SITE ACTIVITIES**

#### **4.4.1 AUDIT SCOPE AND OBJECTIVES**

It is vital to establish the scope and objectives of the audit to ensure that you plan and prepare accordingly. Each audit will be different and will require individual planning. The **scope** defines what you are going to cover in the audit. For example, are you going to look at compliance with:

- the waste aspects of the Scheduled Trade Permit?
- effluent discharge standards and the company's Trade Effluent Discharge Permit?
- all aspects of waste management, from cradle-to-grave?

The scope may also define the boundaries of the audit and will include the delineation of the area, such as which sections of the company, activities and processes are you going to look at and over what time period.

The **objectives** define what the audit will achieve and can be based on various considerations such as regulatory priorities, statutory and regulatory requirements.

Questions to ask include:

- Is this a routine audit?
- Has there been a problem with this company in the past or recently?
- Is there a problem with the sector into which this company falls?
- Is there a problem in the area, to which this company (potentially) contributes?
- Will the audit form the basis of legal action?

The answers will help direct the audit and the manner in which it is undertaken

#### **4.4.2 AUDIT CRITERIA**

The audit criteria are defined requirements against which the auditor compares the evidence that is gathered. The criteria may include regulatory requirements, standards, guidelines and company specific documents, permits and authorisations and any other requirements you may feel are applicable.

#### **4.4.3 PLANNING THE AUDIT**

It is important to plan the audit before you arrive on-site. This may involve a number of activities such as:

##### **(1) Obtaining background information**

The purpose of collecting and reviewing background information is to assemble relevant information that can be used to meet the objectives of the compliance audit. The collection and review of documentation will enable the auditors to become familiar with the operations of the company to be audited, the statutory requirements and other regulations or guidelines that may apply. The types of information that should be reviewed include:

- Permit applications – these should provide some details on the process and site.
- Permit reports – these should give information on the waste streams.
- Evidence of past environmental performance, such as reports, inspections and complaints.
- Ask for an organogram, as this will give you information on where the environmental responsibilities of the

company are, the management levels and the size of the organisation.

- Ask other Departments for copies of the information they may have in their files, such as Department of Labour, Department of Health, and the Compensation Commissioner – if the company has recently moved, contact the local authorities of the area from which they originated, as they may have information on previous problems.
- Media articles – companies very often move if they have been caught polluting in one area. The internet is a valuable resource for this.
- Industry best practice and relevant standards, legal and other requirements.
- Check your files for previous audits and compliance history.
- Establish the community concerns related to the premises, area or industry sector.

If this is an announced audit ask the company to be audited for:

- Site details – maps and process descriptions – you may need specialists to obtain specific or technical information about the organisation – you may need specialists to obtain specific or technical information about the organisation.
- A list of significant environmental aspects and impacts.
- Copies of policies and procedures relating to waste management, hazardous chemical substances, spill control, incident reporting, etc. – you can then see how they have undertaken to manage these issues – when you are on-site you can then verify whether these documents are implemented in practise.
- Copies of third party audit reports

##### **(2) Audit protocol / checklists**

Audit checklists assist audit team members to undertake a thorough, systematic and consistent audit. They focus the auditors' efforts, guide observations and assist in the assessment of evidence against audit criteria. Checklists are a tool, but do not rigidly dictate exactly what is to be audited.

Use the information that you obtain to refine your **audit protocol or checklist**. Two sample checklists have been provided in Annexure Four and Annexure Five. You may want to add or subtract from these checklists depending on the scope and objectives of your audit. **Never undertake an audit or inspection without a checklist to ensure you do not forget essential items** – sometimes companies try to divert the attention of the inspector or auditor, to take the focus off issues. If you have your checklist, you can make sure that you stay on track.

There are different types of checklists as well as different ways of scoring a checklist. The following is an extract from a Responsible Care audit protocol from the South African Chemical and Allied Industries' Association (CAIA):

<b>(10) Characterise all significant pollutants and waste according to their physical properties, chemical composition and toxic or hazardous nature.</b>		
<b>Elements</b>	<b>Subsidiary Elements</b>	<b>Comments</b>
10.1 All significant pollutants and waste have been characterised according to their physical properties, chemical composition and toxic or hazardous nature.	<ul style="list-style-type: none"> <li>a) A pollutant and waste inventory is undertaken on a regular basis.</li> <li>b) Pollutants and wastes are characterised by analysis to determine physical properties, chemical composition and toxic or hazardous nature.</li> <li>c) Hazardous waste is characterised in accordance with the DWA Minimum Standards.</li> <li>d) The waste inventory is revised when operational changes are made to the facility or as a minimum on an annual basis.</li> <li>e) An MSDS is available for each waste stream and emission.</li> </ul>	
<b>(25) Treat and dispose any waste that presents a threat to human health or the environment in a manner that safeguards health and ensures the long-term protection of the quality of the environment, including waste contaminated by a substance in quantities or concentration that would be problematic.</b>		
25.1 Waste that presents a threat to human health or the environment is treated and/or disposed of in a manner that safeguards health and ensures the long-term protection of the quality of the environment	<ul style="list-style-type: none"> <li>a) An up to date waste inventory is available that details the quantities and characteristics of waste generated on-site. Wastes that present a threat to human health and the environment are identified.</li> <li>b) An internal waste manifest is implemented for all waste that is generated that tracks the route of treatment and disposal. Up to date records of waste management are maintained.</li> <li>c) Formalised systems are implemented for the appointment of waste management service providers.</li> <li>d) Waste management service providers are regularly audited in accordance with the CAIA Waste Management Audit Protocols.</li> <li>e) Certificates of treatment and disposal are available for each consignment of hazardous waste managed at off-site facilities.</li> <li>f) Valid permits are available for any on-site treatment and disposal facilities.</li> <li>g) Formal operating procedures are implemented for the operation of on-site treatment and disposal facilities, which include monitoring of performance. Results are maintained of the monitoring programme.</li> <li>h) On-site facilities are regularly audited in accordance with the CAIA Waste Management Audit Protocols. Results of the audit and any recommended corrective action are maintained.</li> </ul>	

The first column will list all the requirements the company legally needs to meet. The second column will provide the auditor with more information on specific aspects to help them determine whether each requirement has been met. The next column is for the auditor to write their comments. If scoring is being undertaken, then a final column is added for the score to be recorded.

When developing a checklist, you should consider the experience and knowledge of the person who will be using it, as well as the environmental risks of the process and facility. This will enable you to select the appropriate level of detail for the checklist.

Experienced auditors can use a checklist that consists of a list of topics to be covered and that does not give details about how to undertake the auditing of each topic. Less experienced auditors should use a detailed checklist that lists everything they need to know and do. This allows inexperienced auditors to undertake audits with relatively little supervision from the lead auditor. Detailed checklists may be required when auditing premises with high environmental risks and to ensure consistency when different personnel are used to audit different facilities.

### **(3) Personal protective equipment**

Find out the requirements for and obtain the personal protective equipment (PPE) you will need for use on-site. PPE may include:

- Safety shoes (always a requirement)
- Hard hat
- Safety glasses
- Gloves
- Overalls (or long sleeves and trousers)
- Hearing protection

#### **CAUTION!**

When visiting company premises, do not wear loose clothing, jewellery or any items that could get caught in moving machinery.

For women, it is better to wear trousers when visiting premises, to prevent awkward situations when climbing up ladders or walking along raised platforms



### **INDUCTION TRAINING**

Companies may require you to attend an induction session before you access their site. This will assist you in understanding the Environmental, Health and Safety, risks that have been identified on-site, which will help to focus the audit. Bear in mind, however, that some organizations may not have identified all their hazards, so use it as a guide.

The induction will give you an idea as to how seriously safety and the environment is taken on site. It also gives you an idea of the training provided to inform employees, contractors and visitors of the site hazards.

### **(4) Logistics**

Try to determine based on the scope and objectives how long you will need to do your audit. Do not underestimate the amount of time it takes to do a physical inspection of large premises.

Potential barriers to a successful outcome need to be identified, assessed and addressed and may include:

- Health and safety requirements for entry
- Implications of bad weather (alternative access, rain protection)
- Hours of operation (access after hours, working times for equipment, availability of key personnel)
- Security of audit personnel

For unannounced visits, local officials with knowledge of the organisation need to be consulted to get as much information as possible. Valuable time will be saved by being informed and understanding the activities and impacts of the organisation before the visit is undertaken.



### **(5) Allocating adequate resources**

Your audit plan (timetable) should include the date and places where on-site activities will be conducted. You should also include the expected time and duration of each activity including the opening meeting, safety induction, site inspection and the closing meeting.

You may not want to audit on your own and may wish to audit as a team instead. In this case a lead auditor should be designated. He / she will determine whether other personnel should be involved and if so, who these members should be. Officials with a working knowledge of the organisation and the area should be involved in the process from the beginning. They will be able to assist with background information and also may participate in the inspection. Team members can assist with assessments, comment on draft reports and provide input for the follow-up action plan. Technical experts may be consulted to provide specialist knowledge and even join the audit if required, or be referred to when necessary.

The lead auditor should:

- Be fully knowledgeable of the audit scope and criteria
- Lead the site inspection
- Act as the main point of contact between the company to be audited and the regulator
- Be responsible for ensuring the overall competence of the audit team.

### **(6) Audit Report**

Decide as a team whether you are going to issue a draft audit report to the company to be audited for comment or whether you will issue the final report without their input.

### **(7) Digital photos**

Make sure that you have a digital camera available for the audit. Photos taken during a site audit can assist in:

- Making the audit report more interesting and explaining issues by referencing photos

- Producing evidence from the site inspection of issues that management may not be aware of
- Providing a baseline for comparison after corrective action has been implemented
- Reminding the auditor of issues that were observed when writing the audit report

Sometimes on reviewing the photos, an auditor can pick up additional issues that were not obvious at the time that the photo was taken.

## **4.5 DO YOU ANNOUNCE THE AUDIT?**

Generally, most compliance audits undertaken by regulators are unannounced, to get an idea of normal operations. Many regulators however prefer announced audits, as the company to be audited are able to prepare their team and the relevant documentation ahead of the visit. This saves time and increases the awareness of the organisation of what is expected to achieve compliance. If prior notification of the audit is given, the purpose of the audit must be specified and an audit plan provided.

Unannounced audits are more likely to reveal the plant's true operating conditions on the day of the audit. They are particularly useful where there is reason to believe the organisation is not complying with legal requirements and there is a likelihood of harm to people and the environment. For each individual audit or audit program, the auditor needs to determine if notification could affect the desired results and if notice is given, how much forwarding is considered sufficient.

The lead auditor also needs to ensure that team members required for the audit are available at on the day. Sufficient resources need to be made available for the audit to be undertaken, such as transport, arrangements for meals, Personal Protective Equipment (PPE), sample containers, recording equipment (cameras, paper, pens, etc.) and copies of the audit protocol.

The team members need to be briefed on the audit purpose, protocol and assignment of audit elements and/or site areas.

**TIP!** Remember that preparation is everything, when you are planning an audit. If you know as much as possible before hand, you will know where to look and what to ask. Valuable time and opportunities may be wasted otherwise. It is important to look for the good, as well as the bad. When you notice good practices or behave, record it. The carrot usually works better than the stick.



- Determine safety, emergency and security procedures
- Ascertain if there are any queries or if further clarification is required

The opening meeting is an important part of the audit process and can set the tone for how the audit will be received and conducted. It is important to be professional and polite throughout the meeting and the audit process. Make sure that you have prepared an attendance register and ensure that you get everyone present to sign. This also helps you to remember the names of those persons participating in the audit and get the spelling correct in the audit report.

## 4.6 CONDUCTING THE AUDIT

### (1) Opening Meeting

When you arrive at the premises hold a short opening meeting with relevant employees responsible for the areas that you are going to audit (including the site manager or owner if possible). The purpose of this meeting is to:

- Introduce yourself and the team members, providing official identification
- Explain the purpose of the audit, outlining the objectives, scope, audit procedures and the background
- Provide a short summary of how the audit activities will be undertaken and the proposed audit plan (remember you may need to be flexible depending on the issues identified on-site)
- Explain the roles and responsibilities of the auditors and auditees
- Determine what PPE is required for a tour of the premises and what Environmental, Health and Safety rules apply
- Establish if you may use your camera or cell phone to record waste practises. If there is an explosion risk, ask them if you may use their equipment (spark-proof). Have a memory stick with you, to ensure you get copies of the photos, without having to rely on the company to send the photos to you later
- Ensure that the required resources and facilities for the audit team are available (availability of employees, an area for audit team to work, changing and ablution facilities)

### (2) On-site audit

Conduct the on-site audit which can consist of a number of activities such as:

- Inspection of the facilities – it is sometimes a good idea to inspect the facilities as the first step. This will give you a good idea of the extent of the operations and the management practises. You can always go back to certain areas at a later stage to confirm issues identified in the documentation
- Review of:
  - ✓ monitoring records – you may want to take your own samples for verification
  - ✓ compliance notices
  - ✓ training records (take down some employees names during the site inspection and look for their training records)
  - ✓ training provided to contractors
  - ✓ documentation
  - ✓ environmental management or environmental improvement plans
- Interviews with employees – always ensure that you verify their response by looking for evidence (Do not forget to interview employees at the shop floor level! They should be knowledgeable of the management system applied to their section of the workplace. Make sure you have a balance between management and shop floor employee interviews. Keep your terminology simple and easy to understand and be sensitive to any language barriers

- Observing employees carrying out their duties

these personnel need to answer and remember to address them before you leave.



### INTERVIEWS

One important way of collecting information is to interview site personnel. This allows the results of observation and documentation review to be verified and enables the interviewee to explain or clarify those results. Conversely, information collected during interviews needs to be verified by supporting information from independent sources, such as observations and records.

Interviews can be conducted one-on-one in a boardroom environment, at the relevant employee's workplace or at the employee's workstation in the operational area. Do not be too formal. Try to put the person you are interviewing at ease by asking them to explain what their job entails. Use open ended questions that start with: Why..., How... When....Who..... Where...?

It is important to **gather evidence** that **verifies** that they do what they say they do and that their workplace practices are in line with the procedures and legal requirements. This includes:

- Gathering information and taking notes – ask for documentations to verify what you have been told
- Completing checklists
- Documenting any observed issues not anticipated during the planning of the audit
- Taking photos
- Obtaining copies of minutes of relevant Environmental, Health and Safety Meetings
- Obtaining copies of permits / licences / authorisations
- Obtaining copies of monitoring data
- Obtaining copies of external assessments completed by the company being audited
- Obtaining copies of any additional documents which may be useful



### BE AWARE!

Audits may be stressful for those audited and problems with understanding may cause confusion. Some people may give you the answer they think you want to hear, rather than the truth. Keep your questions simple and try to put the person at ease, by dealing with the issues, and not making it personal. You will get more information using the gentle approach. Always thank the person for their time and input!



### REMEMBER!

Remember to look for examples of good behaviour and practice. It is always important to acknowledge the things as it generates good will and encourages better performance. Complements go a long way!

Do not limit your photos to non-compliant issues. Take photos of good practises as well to demonstrate what the company is doing that demonstrates compliance.

Make sure you are speaking to the correct site representatives during your interviews. Sometimes the “unavailability” of key personnel is used by companies to divert attention from contentious issues. Do not forget to make a note of the questions that

When auditing, it is often not possible to check every document or record. You should consider how much documentation should be viewed in the time available and relative to the scale of impacts. You may choose to sample a representative number of documented results, such as monitoring

data or incident reports. You can also choose an issue and follow it through the process on-site. For example, the use of a specific hazardous chemical substance. Follow the use of the chemical through the process and verify the relevant documentation.

### TIP!

If sulphuric acid is used in the process check:

- How is it stored – is their sufficient bunding in place, is it stored away from incompatible chemicals?
- Is there a material safety datasheet (MSDS) available near the place of storage?
- Have the employees been trained?
- How is the chemical used in the process?
- How is waste from the process managed?
- How will an emergency related to sulphuric acid be handled?
- How are these reported?

Inspect the relevant facilities and practices in the workplace. Check if personnel know where to find the MSDS, how to use it and if they have been trained. Check for those employees names in the training records



- Query how many copies of the report will be required, to whom they should be sent and how
- Thank them for their participation and cooperation

Explain the process of report preparation and the anticipated timeframes. Let them know that when you are reviewing your documentation you may request additional information from them. Make sure that you have prepared an attendance register and everyone present has signed.

## 4.7 POST-SITE ACTIVITIES

### 4.7.1 POST-AUDIT REVIEW

Audit findings are generated by evaluating evidence collected before and during the site inspection, against the audit criteria. The evidence collected may include observations made on-site, records and documentation on files, as well as any documents produced by the site personnel before, during or after the site inspection. The evidence is generally assessed once the auditor and audit team is back in the office. You need to:

- Review information gathered to determine whether sufficient evidence has been collected to produce audit findings. Go back through your checklists, evidence and documents gathered during the audit process. It is also useful to review the photos to refresh your memory of the issues.
- Fill in any information gaps by following up with the company that was audited. This may include accessing records to verify statements made by site personnel or checking sampling procedures with those who carry out the monitoring.
- Evaluate the evidence against the audit criteria and compile a list of audit findings.
- Consult with the other team members and compile an integrated list of findings.

Non-compliance may be assessed to determine the significance of its actual or potential impact on the environment. The company that was audited can use this assessment to rank or categorise non-

### (3) Audit Closing Meeting

Once you have completed your site inspections, conducted all interviews and collected all necessary evidence, a closing meeting should be held with the relevant site representatives. In this meeting you should:

- Provide the company with **preliminary feedback** relating to the audit. They will have some idea of how the audit went before the final report is issued. Make sure however that they are aware of the need to review and consolidate the audit evidence
- Clarify any areas of uncertainty.
- Provide details of any issues that need immediate attention
- Request any information needed to finalise audit findings

compliance so follow-up actions can be prioritised if numerous non-compliances are identified. The significance of non-compliance can be assessed by considering factors such as:

- the level of threat and sensitivity of the receiving environment
- the toxicity and load of the pollutant involved
- proximity to the receiving environment
- probability of the event occurring.

Once compliance with each requirement has been assessed, you should document the findings in a table. This table can then be used as a basis for compiling the compliance audit report.

#### 4.7.2 AUDIT REPORT

It is important that you present the company with a professional report which details the outcome of the audit. The report is a consolidation of the work that you have done and includes non-conformances, observations and required actions that must be taken. Recommendations can also be added, if deemed necessary.

It is always preferable to deliver your audit report in person and to present it to the management team or owner. That way you can be sure they understand the contents of the report. You can also discuss and agree the timeframes for required actions. An action program can be developed with input from the company to ensure that the actions required are appropriate and achievable. This may involve the following steps:

- Reviewing all non-compliances
- Establishing a framework within which the company can implement the action plan to achieve compliance. This should not contain prescriptive recommendations on how to address the non-compliances, but should be based on a risk assessment that enables the company, in conjunction with regulator, to prioritise remedial action and to determine the timeframe within which the non-compliances will be addressed
- Agreeing on the submission of progress reports if deemed necessary.

NOTE: when providing an electronic copy of an audit report:

- Always insert photographs as a \*.jpeg files as this keeps the report file size small and makes the report easier to send by email.
- Convert your report to an Acrobat file and 'lock' the report so that changes cannot be made.



#### TERMINOLOGY

**Non-compliance** – Legal non-compliance. Include objective evidence such as photos, analytical reports, etc.

**Observation** – This is where there is no specific legal requirement but where improvements can be made to prevent pollution from occurring.



#### NOTE:

Make sure you include a statement in your audit report such as:

*It is noted that due to the audit methodology and associated time constraints, if a non-compliance is not raised in respect of a legal requirement, it does not necessarily mean that no non-compliance exists.*

## AN EXAMPLE OF AN AUDIT REPORT STRUCTURE

- |   |   |
|---|---|
| <b>Cover page</b>                         | <ul style="list-style-type: none"><li>▫ Title of report</li><li>▫ Name of auditee</li><li>▫ Authority (and persons) who produced the report</li><li>▫ Date and reference number</li><li>▫ Logos if desired (use jpg formats)</li></ul>  |
| <b>Executive summary</b>                  | <ul style="list-style-type: none"><li>▫ Some managers will not have time to read your whole report, so you should develop a short summary that provides a quick overview of the company's performance.</li><li>▫ Include the key findings in this summary so that employees are immediately aware of the important site issues.</li></ul>   |
| <b>List of abbreviations and acronyms</b> | <ul style="list-style-type: none"><li>▫ List all the abbreviations and acronyms used in your report</li></ul>   |
| <b>Table of contents</b>                  | <ul style="list-style-type: none"><li>▫ Format a table of contents from the headings in your document and link each heading to the relevant page number. This makes it easier for the reader to access the required information electronically.</li></ul>   |
| <b>Report contents</b>                    | <ul style="list-style-type: none"><li>▫ <b>Audit scope, and objectives</b> – include what you covered in the audit and what the objectives of the audit were. Include details of the audit team and the personnel interviewed – make sure you check the correct spelling of their names</li><li>▫ <b>Audit criteria and reference documents</b> – describe the criteria against which you audited and list the documents that you reviewed</li><li>▫ <b>Audit process</b> – give a short explanation of the process used – date(s) of audit, opening and closing meeting attendees, site inspections, documentation review, etc.</li><li>▫ <b>Audit comments</b> – what you reviewed and which aspects were found to be compliant</li><li>▫ <b>Non-compliances, observations and recommendations</b> – present these in a table format, reference the legal requirements and the evidence that led you to draw that conclusion – you may wish to categorisation and prioritise non-compliances in terms of risk</li><li>▫ <b>Assessment of performance</b> – short summary on performance of the company in terms of the audit</li><li>▫ <b>Actions plans</b> – you may wish to direct certain actions to be taken by a specific date or you may request that the company prepares an action plan for submission and acceptance by the authorities by a certain date.</li></ul> |
| <b>Annexures</b>                          | <ul style="list-style-type: none"><li>▫ Photographic records (or you may wish to include the photos in the body of the report)</li><li>▫ Opening and closing meeting registers</li><li>▫ Checklists, analytical results, other documentation</li></ul>  |

### 4.7.3 AUDIT FOLLOW-UP

It is essential that you follow up on your audit report with company that was audited. Audits are a valuable tool for ensuring continual improvement and you need to ensure that the required actions and any follow-up action plans being addressed as agreed. In today's business world, everyone is extremely busy and unless you follow-up, your audit may not receive the attention it deserves. The benefits that could have arisen out of your audit will then be lost.

### 4.7.4 QUALITY ASSURANCE AND RECORD KEEPING

The value and credibility of a compliance audit depends on its proper management. All compliance audits must be undertaken in accordance with the relevant authorities' quality procedures. The purpose of quality assurance procedures is to ensure that all audit tasks are carried out consistently as the contents may need to be used at a later stage for prosecution. Record keeping ensures the proper and systematic recording of information and observations collected during a compliance audit. Good record keeping and filing procedures will ensure that all supporting documentation and observations are kept for future reference. All audit information should be filed and should contain a number of subsections to store the audit information in an orderly manner. Include a copy of the compliance audit report and any detailed assessments documented in other areas.

### 4.7.5 ASSESSMENT OF AUDIT PROCESS

After each audit, meet with the audit team to discuss how the audit went. Find out what worked and what did not.

- Could additional resources (more auditors or more time) have led to a more comprehensive audit?
- Was the audit team able to address the technical information in sufficient detail or would the input of a specialist have been more effective?
- Could the interviews have obtained more information, if they had been conducted differently or with different personnel?

- Do the auditors need more training? In what areas or which issues?

By conducting a 'post-mortem' or review of the audit, you can identify the actions required to improve upon your performance for the next audit that you conduct.

### 4.8 SELECTION OF AUDITORS

It is important that the persons selected to conduct audits are skilled in:

- Auditing principles, procedures and techniques
- Planning
- Time management
- The subject matter of the audit
- The legal requirements relating to the scope of the audit
- Interviewing techniques
- Communication
- Assessment and verification of documentation
- Maintaining confidentiality and impartiality
- Report writing

It is advisable that potential auditors attend a recognised course on auditing.



#### PERSONAL ATTRIBUTES OF AUDITORS

**Ethical** – fair, truthful, sincere, honest and discreet

**Open minded** – willing to consider alternative ideas or points of view

**Diplomatic** – tactful in dealing with people

**Observant** – actively aware of physical surroundings and activities

**Perceptive** – instinctively aware of and able to understand situations

**Versatile** – adjusts readily to different situations

**Tenacious** – persistent, focused on achieving objectives

**Decisive** – reaches timely conclusions based on logical reasoning and analysis

**Self-reliant** – acts and functions independently while interacting effectively with others

Source: 3.Guidelines for Quality and / or Environmental Management Systems Auditing. SANS 19011:2003

APPA	Atmospheric Pollution Prevention Act, 45 of 1965
Asbestos Regs	Asbestos Regulations of 2001 promulgated in terms of the OHSAct
Audit	Systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled
Audit Finding	The result of the evaluation of the audit evidence against the audit criteria and may include non-compliance issues and observations
Auditee	The person who answers the auditors questions on behalf of the company being audited
Auditor	The person who is conducting the audit
Audit Plan	The description of activities and arrangements for the audit, including the timeframes thereof
Audit Scope	The extent of the audit – what will be assessed (such as waste management) and the company’s operational areas that will be reviewed
ECA	Environment Conservation Act 73 of 1989
Consignee	The person who accepts dangerous goods.
Consignor	The person who offers dangerous goods for transport.
Cradle-to-Grave	A policy of controlling a Hazardous Waste from its inception to its ultimate disposal.
Dangerous Goods	Goods that are capable of posing a significant risk to health and safety or to property or the environment during transport and that are listed in B2 and Annex C (of SANS 10228 – <i>The Identification and Classification of Dangerous Goods for Transport</i> ).
Dangerous Goods Declaration	Document that describes and quantifies the dangerous goods being transported from a consignor to a consignee.
DEAT	Department of Environmental Affairs and Tourism
DGD	Dangerous Goods Declaration
DoL	Department of Labour
DoT	Department of Transport

Duty of Care	This requires that any person who generates, transports, treats or disposes of waste must ensure that there is no unauthorised transfer or escape of waste from his control. Such a person must retain documentation describing both the waste and any related transactions. In this way, he retains responsibility for the waste generated or handled.
DWAF	Department of Water Affairs and Forestry
EHS	Environment, Health and Safety
EMS	Environmental Management System
EWS	eThekwini Water and Sanitation
HBA	Hazardous Biological Agents
Hazard Rating	A system for classifying and ranking Hazardous waste according to the degree of hazard they present. This is based on Mammalian Acute and Chronic Toxicity, Ecotoxicity, and Environmental Fate. Based on this, Hazardous waste is classified as: Extreme Hazard, Hazard Rating 1; High Hazard, Hazard Rating 2; Moderate Hazard, Hazard Rating 3; and Low Hazard, Hazard Rating 4 This is used to determine the appropriate landfill for disposal of waste
HBA Regs	Hazardous Biological Agents Regulations of 2001 promulgated in terms of the OHSAct.
HH Landfill Site	High Hazard Landfill Site
Hh Landfill Site	Low Hazard Landfill Site
HCS	Hazardous Chemical Substances
HCS Regs	Hazardous Chemical Substances Regulations of 1995 promulgated in terms of the OHSAct.
Interim Fire Code	Interim Code Relating to Fire Prevention and Flammable Liquids and Substances PN 5417 of 23 March 2000
Lead Regs	Lead Regulations of 2001 promulgated in terms of the OHSAct
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act 107 of 1998
Non-compliance	Non-compliance with a legal requirement Observation –
NRTA	National Road Traffic Act 93 of 1996
NWA	National Water Act 36 of 1998
NWMS	The National Waste Management Strategy

Observation	Where no specific legal requirement is being transgressed but where improvements can be made to prevent pollution from occurring.
OHSAct	Occupational Health and Safety Act 85 of 1993
PPE	Personal Protective Equipment
RPE	Respiratory Protective Equipment
PrDP-D	Professional driving permit for dangerous goods
Pollution	Any change in the environment caused by substances, radioactive or other waves or noise, odours, dust or heat emitted from any activity where that change has an adverse effect on human health or wellbeing or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future
Promulgation	The promulgation of a law is the act of formally proclaiming or declaring new law when it receives final approval. After it is approved, the new law is officially announced to the public by way of publishing the text in a government gazette.
Residue	A substance that is left over after a waste has been treated or destroyed.
Risk	The scientific judgement of probability of harm. This basic and important concept has two dimensions: the consequences of an event or set of circumstances and the likelihood of particular consequences being realised. Both dimensions apply to environmental risk management with it generally being taken that only adverse consequences are relevant.
SANS	South African National Standard – These standard documents were previously referred to a South African Bureau of Standards Codes – SABS Codes
Scheduled Trade Bylaws	City of Durban Scheduled Trade and Occupations Bylaws PN 134 of 1979
Sterilise	Make free from micro-organisms.
TCLP	Toxicity Characteristic Leaching Procedure
TETA	Transport Education Training Authority
Trade Effluent Bylaws	Durban Transitional Metropolitan Council Sewage Disposal Bylaws MN 27 of 13 <sup>th</sup> May 1999
Toxicity	An intrinsic property of a substance which can cause harm or a particular adverse effect to humans, animals or plants at some dose.
Toxicity Test	Quantifies the concentration/effect relationship for a given substance or effluent and the chosen response of an organism (measures the sensitivity of the organism to the test substance)

TCLP

Toxicity Characteristic Leaching Procedure

Toxicity Characteristic Leaching Procedure

A test developed by the USA Environmental Protection Agency to measure the ability of a substance to leach from the waste into the environment. It thus measures the risk posed by a substance to groundwater.

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1. Environmental Auditing, Integrated Environmental Management, Information Series 14, 2004. Department of Environmental Affairs and Tourism (DEAT) Pretoria.
  2. The Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition 1998. Department of Water Affairs and Forestry's Waste Management Series Document.
  3. Guidelines for Quality and / or Environmental Management Systems Auditing. SANS 19011:2003.
  4. Compliance Audit Handbook, Compliance and Assurance Section of the Department of Environment and Conservation, New South Wales.
  5. Chemical and Allied Industries' Association Responsible Care programme – Assessment Protocols

## **ANNEXURE ONE**

# **POLICY ON THE HANDLING AND DISPOSAL OF ASBESTOS AND ASBESTOS CONTAINING WASTE IN TERMS OF SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989)**

# **POLICY ON THE HANDLING AND DISPOSAL OF ASBESTOS AND ASBESTOS CONTAINING WASTE IN TERMS OF SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989)**

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## **1. Purpose of Policy**

The purpose of this policy is to provide clarity regarding the handling and disposal of asbestos containing waste (ACW), both when disposing in a mono-disposal site, i.e. a site specifically design for asbestos, or a co-disposal site.

## **2. Introduction**

Asbestos is an indigenous fibrous mineral that has been mined in a number of sites in Southern Africa and, because of its excellent resistance to heat, has been used for the manufacture of various products since the 1900's (see section 4). Many studies have described a link between occupational exposure to various types of asbestos and lung cancer and associated diseases and has therefore been designated as a *known human carcinogen*. This carcinogenic activity is directly linked to the air pathway and ingestion of the fibres when swallowed in water does not carry any associated cancer risks. Asbestos shows a slight solubility in water and the natural fibres tend to become blunted on a molecular scale thus greatly reducing the associated cancer risk. Water therefore serves as a natural route for the removal of fibres from the air and as a mechanism to suppress the emission of fibres into the air environment.

## **3. Legislative Framework**

The disposal of asbestos is controlled under section 20 of the Environmental Conservation Act, 1989. This section states that waste may only be disposed on a site that is permitted by the Department of Water Affairs and Forestry. Other applicable legislation includes the:

- \* Occupational Health and Safety Act (OHSA) (Act 85 of 1993)
- \* The Asbestos Regulations (R773 of 10 April 1987) promulgated under the OHSA
- \* Mine Health and Safety Act (Act 101 of 1993)
- \* National Environmental Management Act (Act 107 of 1998)

The Department of Water Affairs and Forestry (DWAF) is committed to the principles of co-operative governance, therefore the handling and disposal of asbestos must take into account other applicable legislative requirements.

## **4. Sources and Classification of Asbestos Containing Waste**

Asbestos containing waste (ACW) is divided into four hazard classes, A to D, table 1. The major types and are given in table 1:

Table 1: Classes of ACW and examples of waste falling each class:

ACW Hazard Call	Examples of ACW
<p><b>Class A:</b> Any friable ACW</p>	<p>Raw asbestos (e.g. asbestos damaged in transit or no longer required).</p> <p>Bags previously used to transport raw asbestos (that have not been melted into a solid mass).</p> <p>Asbestos insulation, limpet spray of pipe lagging removed from power stations, buildings, boilers or pipe works.</p> <p>Pure asbestos rope or textiles</p>
<p><b>Class B:</b> Any non-friable ACW that has become crumbled, pulverised or reduced to powder during manufacturing, installation, renovation or demolition operations, such that it is likely to release fibres into the air.</p>	<p>Dry swarf or cutting dust from the asbestos cement or friction material production process.</p> <p>Used filter bags from dust extraction units at the workplace.</p> <p>Asbestos cement that has unavoidably been crumbled, pulverised, or reduced to powder during demolition operations.</p> <p>Disposal equipment and clothing contaminated with asbestos.</p>
<p><b>Class C:</b> Any Class B ACW that has been adequately wetted or otherwise encapsulated such that it will not release fibres into the air</p>	<p>Wet swarf or cutting dust from the asbestos-cement or friction material production process.</p> <p>Sludge, slurry or wet waste from the production process.</p> <p>Bags previously used to transport asbestos that have been melted into a solid mass in an autoclave.</p>
<p><b>Class D:</b> Any non-friable ACW that is essentially in the same condition as when manufactured and is unlikely to release respirable fibres after being declared a waste product.</p>	<p>Asbestos cement sheets or pipes.</p> <p>Off cuts of asbestos-cement sheets or pipes.</p> <p>Disused friction products such as gaskets, brake pads or clutch plates</p>

In table 1, the potential hazard or risk associated with the release of fibres, see section 5, is highest in class A and decreases to class D, where the risk posed by the waste is extremely small.

A similar approach is used by the US EPA which has published a document in terms of their National Emissions Standards for Hazardous Air Pollutants (NESHAP) [1], in which they define a number of important terms and conditions for asbestos products, i.e.

***Friable Asbestos Material:*** is any material containing more than 1 % asbestos as determined using Polarised Light Microscopy (PLM), that when dry, can be crumbled, pulverised, or reduced to powder by hand pressure.

***Asbestos Containing Waste Material:*** includes mill tailings or any waste that contains commercial asbestos. The term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial

asbestos.

***Non-friable asbestos Containing Material:*** is any material containing more than 1 % asbestos as determined by Polarised Light Microscopy (PLM), that when dry, cannot be crumbled, pulverised, or reduced to powder by hand pressure.

Note that in the US EPA definition a material must contain more than 1 % asbestos before it falls into the hazard category, which is similar to the proposed class A, ACW. However, due to the problems associated with this analysis, it is proposed that waste is even suspected of containing asbestos that is friable, be considered for class A.

## 5. **Toxicity and Hazard Rating**

Asbestos is classified as HG1, an extreme hazard, in terms of the Minimum Requirements for the Classification, Handling and Disposal of Hazardous Waste because it is a Group A carcinogen, i.e. it has definitely been shown to cause cancer in humans [2-3]. The fibres, which may not be present in all forms of asbestos, can cause lung and other forms of cancer. Six groups of asbestos fibres are recognised and these are further divided into two main groups, i.e. amphibole-asbestos and serpentine-asbestos. The latter, which is commonly known as white asbestos, is chrysotile, whereas the blue or amphibole asbestos group includes crocidolite, amosite, tremolite, actinolite and anthophyllite. Blue asbestos is classified as class 9(II) in terms of SABS 0228 and white asbestos as class 9(III) [3].

All forms of asbestos are assumed, in terms of the precautionary principle, to be extremely hazardous, HGI, i.e. to be a class A ACW, until proven otherwise. However, in the Minimum Requirements [2], it is a fundamental principle that a waste can be downgraded or “delisted”, if it can be shown that the concentration or availability of the hazardous component is below an acceptable risk limit. Provided the ACE is probably hazardous only because of its potential to release fibres and there are no other hazardous components, e.g. leachable heavy metals, then if no fibres are released above the accepted action level, it can be considered non-hazardous and delist.

The accepted action level for determining whether an ACW is hazardous is that defined in the Occupational Health and Safety Act (Act 85 of 1993) as the ability to release “0.5 regulated asbestos fibres per millilitre”. A regulated asbestos fibre means “a particle of asbestos with a length to diameter ratio greater than 3 to 1, a length greater than five micrometers ( $\mu\text{m}$ ) and a diameter less than 3  $\mu\text{m}$ .” The four classes of ACW are further defined below.

A Class A, ACW is that which has been shown to or because of its origin or form (table 1) is suspected to give off regulated fibres above 0.5 per millilitre and is classified as extremely hazardous, HGI.

A Class B, ACE is one that because of its origin may be not hazardous due to the release of regulated fibres but tests for fibres have not been conducted. Therefore, it is classified as an extreme hazard, HGI in terms of the precautionary principle.

A Class C, ACW is one that, because of its origin or form (table1), or because of treatment, e.g. by cementation, by containment in sealed drums or bags and/or is adequately wetted (section 6.2.1) cannot give off regulated fibres or the numbers of regulated fibres have been shown to be below the legal action level of 0.5 per millilitre. A Class C, ACW is not hazardous due to the production of regulated fibres and therefore delists in terms of the

Minimum Requirements [2].

A Class D, ACW is one that, because of its origin or form (table 1), i.e. one that is manufactured and has been adequately demonstrated to not give off regulated fibres above 0.5 fibres/ millilitre. As a precaution, treatment, e.g. by wetting prior to disposal, must be done. A Class D, ACW is not hazardous due to the production of regulated fibres and therefore delists in terms of the Minimum Requirements [2].

Asbestos is normally inert to the leaching of heavy metals and other hazardous species, but a TCLP or Acid Rain leaching test must be done, if contamination with other hazardous species is suspected due to its prior use or subsequent contamination.

## 6. Approved Treatment and Disposal Methods

All operational procedures must be in accordance with the Asbestos Regulations

### 6.1 Waste Minimisation

In accordance with the National Environmental Act (Act 107 of 1998), the Department of Water Affairs and Forestry will encourage any procedures that result in the avoidance and/or recycling of asbestos waste. Recycling of waste produced within the production process is preferred and only unavoidable waste should be disposed. The utilisation and destruction of asbestos, when used as part of the feedstock into cement kilns or incineration processes, may be acceptable, but application for a permit must be made to the Department of Water Affairs and Forestry and the Department of Environmental Affairs and Tourism.

### 6.2 Treatment Technologies

#### 6.2.1 Wetting

*The major technology used to minimise the formation of asbestos fibres is to wet it normally with water. The US EPA has defined the term “Adequately Wetted”, when water is used to control the emissions of particulate asbestos [1] and this terminology has been accepted for use in South Africa.*

*“Adequately wetted means to sufficiently mix or penetrate the ACW with liquid to prevent the release of airborne fibres. Suitable liquids include a wetting agent, amended water (water to which surfactant chemicals have been added, such as a 50:50 mixture of polyoxyethylene ester and polyoxyethylene ether in a 0,16 % solution of water) or plain water.”*

The ACW should be visibly wet and, if bagged, droplets of moisture should be evident. Control procedures, see section 6.3, must be in place to ensure that the ACW is adequately wetted and does not dry out during handling, transport or disposal.

#### 6.2.2 Solidification

Solidification of asbestos wastes can be accomplished utilising cement and

other fixation agents such as water based silicates. Cementation by the addition of Ordinary Portland Cement or other Department of Water Affairs and Forestry approved poliozanic material can be cost effective, particularly Class A and B ACW. Note that cementation into a massive form would result in a Class D ACW. Any procedure must be approved by the Department and include test data on the final product showing that the fibre levels have been reduced to the accepted level.

### 6.3 Landfilling

Application must be made to the Department of Water Affairs and Forestry for permission to dispose asbestos at any site. Information required for full permitting include:

- The design plan for the proposed disposal area;
- A operational plan approved by the Department of Labour that the proposed operating procedures comply with the Asbestos Regulations;
- A rehabilitation plan; and
- Proof of Land Zoning

Asbestos can be disposed to a mono-disposal site or a co-disposal site.

#### 6.3.1 Mono-disposal Sites

A mono-disposal site is one *solely for the purpose of accepting asbestos* and, because asbestos does not pose a pollution risk to water resources, the normal lining requirements for waste disposal facilities, as outlined in the Minimum Requirements for the Disposal of Waste to Landfill [4] do not apply. The liner must be an impregnable layer of at least 500mm, consisting of material such as cement or solidifies ash. A mono-disposal site for asbestos must be closed by covering with a 500mm layer of ash followed by an ashcrete or concrete dome. An ashcrete dome must consist of at least 10 % by mass of cementitious material, be compacted to ~2 % above optimum moisture content and must be 1 metre wider and longer than the trench width and length.

#### 6.3.2 Co-disposal Sites

The Department requires all waste to be treated in order to minimise the risk to human health and the environment. All classes of ACW can be so treated before disposal.

Because Class A, ACW is a known human carcinogen with a hazard rating of 1, and Class B, ACW are potentially hazardous, the Department requires direct disposal of these categories to HH co-disposal sites.

However, all classes of wastes, A to D can be treated before disposal, section 3.2, and

Hh or G Landfills can apply for a permit amendment to accept other forms of asbestos provided that the correct treatment and control procedures are in place or/and the practice of disposal does not constitute a hazard and is fully compatible with the Minimum Requirements.

All sites must be specifically permitted for the acceptance of ACW and application must be made to the Department for an amendment.

The requirements should be discussed with the Regional office of the Department, but permission will not be granted where informal recycling is taking place or where there is any potential for risk to the public or workers. Note that a demarcated area and surveyed area must be set aside for asbestos disposal (see section 6.3.3).

6.3.3 Landfilling Practice. The following practices must be observed:

- ❑ All fibrous material falling into classes A to C (see table 1) must be double bagged in plastic bags with a minimum thickness of 75 microns before the waste is brought to the landfill. Transparent bags are referred, since they allow inspection of the waste to see if it is “adequately etted” without having to undo the bag. This avoids having the operator, auditor or inspector potentially exposed to fibres. Droplets of moisture should be visible on the inside of the bag.
- ❑ Class D wastes (see table 1) that includes larger items such as pipes and boards should be kept wet as a precautionary measure at all times before disposal at the site. Class D wastes should be transported in vehicles or stored should be covered with a tarpaulin and wetted immediately prior to disposal.
- ❑ All asbestos waste (classes A to D) that has been treated and packaged as required in these regulations, must be deposited into trenches and immediately covered. Options include:

On a mono-disposal site, the waste must be deposited in a trench ash and immediately covered with, at least, a metre of ash.

On a co-disposal site, the waste must be immediately covered with domestic waste and carefully compacted. Otherwise it can be deposited in a deep trench, the waste must be completely covered with layer of ash, at least 25cm in depth. This will provide sufficient protection to the waste before a second layer is deposited on top. The trench should be closed, by adding a final layer of ash and/or general waste of at least 50cm in depth and compacting.

- ❑ During disposal, care must be taken to minimise the potential breaking of bags.
- ❑ *Only essential personnel* should be allowed to be close to the waste and should, as far as is possible, stand up wind, while the waste is being disposed. Personal protective equipment required in terms of the Occupational Health and Safety Act and the Asbestos Regulations must be worn at all times.
- ❑ No scavenging or other reclamation activities are allowed on or near the ACW disposal area within a waste disposal site, although the general

presence of scavengers does not automatically disqualify a site.

- ❑ On a co-disposal site, a surveyed area with the coordinates must be designated as the ACW disposal area. Other waste can be disposed in this area, but records must be maintained in order to prevent trenching or other operations taking place that could lead to the release of asbestos fibres.
- ❑ The ACW disposal area must be demarcated with hazard tape and signs erected to indicate that it is an asbestos area in terms of the asbestos regulations and that the appropriate protective clothing and equipment must be worn.
- ❑ No further trenching will be allowed on top of an area previously used for ACW unless it is covered with a layer of compacted waste that is at least 3 metres in depth.
- ❑ A monitoring programme for staff required by the Occupational Health and Safety Act should be implemented. This requires an initial analysis followed by regular monitoring at intervals of between 6 months and 2 years depending on the initial level.
- ❑ The procedures for disposal of ACW must be maintained at all times and must be specifically included in the internal auditing programme and annual external auditing programmes.

## 7. **Permit Requirements for Landfilling**

The Department requires any site that wishes to dispose of ACW to apply for an amendment to its permit. The requirements are those listed in these regulations but before formal application, it is recommended that the applicant discuss the requirements with the Regional office of the Department.

## 8. **References**

- [1] US EPA: Asbestos NESHAP Adequately Wet Guidance; EPA340/1-90-019, December 1990
- [2] Department of Water Affairs and Forestry, "Minimum Requirements for the Classification, Handling and Disposal of Hazardous Waste". 2<sup>nd</sup> edition, Pretoria, 1998
- [3] SABS, "Code of Practice for the Identification and Classification of Dangerous Substances and Goods, 0228 – 1990, Pretoria, 1990
- [4] Department of Water Affairs and Forestry, "Minimum Requirements for Waste Disposal by Landfill", 2<sup>nd</sup> edition, Pretoria, 1998

## **ANNEXURE TWO**

**DWAF POLICY RESOURCE ENTITLED  
PROCEDURE WITH REGARD TO THE  
ISSUING OF EXEMPTIONS UNDER SECTION  
20 OF THE ENVIRONMENT CONSERVATION  
ACT, 1989 (ACT 73 OF 1989)**

**PROCEDURE WITH REGARD TO THE ISSUING OF EXEMPTIONS  
UNDER SECTION 20 OF THE ENVIRONMENT CONSERVATION  
ACT, 1989 (ACT 73 OF 1989)**

**PURPOSE OF THIS PROCEDURE**

- To serve as a guideline document for applying for an exemption under section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989).
- To outline the procedure to be followed and the type of information to be submitted for consideration for the issuing of an exemption.

**BACKGROUND**

The Department of Water Affairs and Forestry (DWAF) is mandated to issue permits for disposal sites<sup>1</sup> in terms of section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989). According to section 20(1) "no person shall establish, provide or operate any disposal site without a permit issued by the Minister of Water Affairs and Forestry". Section 20(1) also states that the Minister may exempt any person or category of persons subject from such conditions, as he may deem fit. Based on this DWAF issues permits and exemptions once the principles of the Minimum Requirements 2<sup>nd</sup> edition have been complied with by the applicant, in accordance with section 20(3).

In some instances, it is considered appropriate to issue an exemption rather than a permit, specifically for activities related to the recycling and/or the treatment of waste, for example where an applicant wishes to recycle waste material into a commercial product such as the conversion of ash waste into bricks as well as the temporary storage of some types of waste material. The Department can, after careful evaluation, exempt an applicant from complying with some of the requirements for permitting. This implies that, provided all the necessary information required for granting of an exemption have been submitted, an exemption to undertake a particular activity will be granted in terms of section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989).

All waste management facilities must register, on the Department of Water Affairs and Forestry's WARMS System, in terms of the National Water Act, 1998 (Act 36 of 1998) and as required in the National Waste Management Strategy (NWMS) Action Plan for Waste Disposal.

**INFORMATION WHICH IS REQUIRED IN SUPPORT OF AN APPLICATION FOR AN EXEMPTION**

1. The application should clearly state the reasons for the application.
2. A clear description of the activity is required, which should include:
  - 2.1 Sources, descriptions and quantities of raw or waste materials used. Classification of the material should be done according to the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (second edition, 1998).

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<sup>1</sup> Disposal site means a site used for the accumulation of waste with the purpose of disposing or treatment of such waste (as defined in Section 1 of the Environment Conservation Act, 1989).

- 2.2 Description and quantities of waste stream **generated**, as well as its classification according to the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (second edition, 1998).
  - 2.3 **Water** management plan, including quantity and quality.
  - 2.4 A site layout indicating specific details regarding construction of the storage or disposal site (designs).
  - 2.5 Specific information on the timeframe applicable to the establishment of the facility (in the case of new facilities) includes the life of the facility until closure and decommissioning.
3. The locality of the activity, which should include:
    - 3.1 Locality map.
    - 3.2 Approved zoning.
  4. Details regarding the operation of the activity, especially management of impacts likely to result from the activity e.g. stormwater management, waste, effluents, leachate etc.
  5. The human health, environmental and the risk implications associated with the storage or disposal of this material e.g. risk of odours, noise, dust and both surface and underground water etc.
  6. Mitigation measures to be implemented to mitigate these risks.
  7. Proposed monitoring.
  8. In the event of this being a recycling activity:
    - 8.1 The material used as well as the product must be classified according to the Minimum Requirements, and include a comparison of the classification of the product to another similar commercial material already in the market.
    - 8.2 Should the product made from the waste be used in the building industry proof of confirmation that the proposed material complies with SABS specifications for building materials is required.
  9. A Record of Decision or proof of an exemption of the EIA Regulations promulgated in terms of section 26 of the Environment Conservation Act, 1989 (Act 73 of 1989), from the Provincial Department of Environmental Affairs in accordance with Section 21 and 22 of this Act is required, as well as authorisation required in terms of other legislation.
  10. Detailed information on the decommissioning of the activity.

Please note that the **underground** storage of **hazardous material** has the potential to impact on the ground water environment. The Department does not recommend such storage unless it can be proved through proper motivation, that the operation will not adversely impact on the environment, especially on the groundwater environment. This motivation should *inter alia* include detailed designs of containment aspects, monitoring for effectiveness of the proposed system and contingency plan in the case of failure of containment.

It should however be stressed that the decision to issue an exemption solely lies with the Department and should it be decided that a permit will be issued, the applicant will be required to furnish the Department with all the necessary information to satisfy the requirements for a permit. Furthermore the Department may, during the process of evaluation of the application, require any additional information from the applicant that may be necessary to reach a decision.

## **RESPONSIBILITIES**

<b><i>TASK</i></b>	<b><i>RESPONSIBILITY</i></b>
1. Investigations on a proposed activity	Applicant
2. Classification	Applicant
3. Zoning	Applicant
4. Compliance with EIA Regulation	Applicant and the relevant provincial Department of Environmental Affairs
5. Register on WARMS	Applicant and the relevant Regional Office of Department of Water Affairs and Forestry
6. Submit application	Applicant
7. Evaluation of an application	Department of Water Affairs and Forestry
8. Issuing and amendment of an Exemption	Department of Water Affairs and Forestry Head Office

The Department does not approve the technology to be applied in a particular activity, but only issue exemptions for the use of such technologies. It is the responsibility of the applicant to ensure that the technology in question is approved by the relevant organ of State or Department or any other recognised body authorised to do so before the application for an exemption is submitted to the Department of Water Affairs and Forestry.

*Compiled by: J.C. Maluleke*

*Updated by: Wilna Moolman - 25 April 2002*

## **ANNEXURE THREE**

**DWAF POLICY ON THE DEFINITION OF DISPOSAL SITES WITH REGARD TO THE ISSUING OF PERMITS FOR WASTE INCINERATORS, WASTE MANAGEMENT FACILITIES AND OTHER ALTERNATIVE WASTE DISPOSAL TECHNOLOGIES AND RELATED GUIDELINES.**

## **INTERPRETATION OF THE DEFINITION OF DISPOSAL SITES WITH REGARD TO THE ISSUING OF PERMITS FOR WASTE INCINERATORS, WASTE MANAGEMENT FACILITIES AND OTHER ALTERNATIVE WASTE DISPOSAL TECHNOLOGIES AND RELATED GUIDELINES**

### **1. BACKGROUND**

As landfills across South Africa continue to fill, acceptable sites for new landfills become more difficult to find, especially in populated areas. This problem is forcing waste managers to become more resourceful in their search for space and to limit the amount of landfills through regionalisation and also to follow the cleaner technology route by establishing facilities such as waste recycling plants, treatment plants, transfer stations, storage areas and vacuum pyrolysis plants.

Vacuum pyrolysis plants, incinerators, compost plants, transfer stations, storage facilities and recycling plants are all seen as waste disposal sites according to the definition of a disposal site in terms of section 1 of the Environment Conservation Act, 1989 (Act 73 of 1989)(ECA). "Disposal site" means a site used for the accumulation of waste with the purpose of disposing or treatment of such waste. The facilities mentioned are seen as disposal sites because of the "continuous" storage of waste on the premises of these plants or sites before the disposal, removal or handling thereof.

### **2. LEGAL REQUIREMENTS**

According to section 20(1) of the ECA "no person shall establish, provide or operate any disposal site without a permit issued by the Minister of Water Affairs ..." and for this reason the above-mentioned facilities should obtain a disposal site permit before they are established or operated.

Section 20(6) of the Environment Conservation Act, 1989 (Act 73 of 1989) determines that no person shall discard waste or dispose of it in any other manner, except -

- (a) at a disposal site for which a permit has been issued; or
- (b) in a manner or by means of a facility or method and subject to such conditions as the Minister may prescribe.

In terms of the said Act, "prescribe" means "prescribe" by regulation and no such regulations have been issued by the Minister of Environment Affairs in this regard. This means that waste has to be disposed of at a disposal site which is defined as a site used for the accumulation of waste with the purpose of disposing or treatment of such waste. The land on which an incinerator/transfer station/waste recycling plant/treatment facility/waste storage area is established/installed, can thus be regarded as a disposal site for which a permit should be issued in terms of the mentioned act.

There are a few other legal requirements which must be complied with in order to permit

and operate a waste disposal site including the above-mentioned facilities eg. the EIA Regulations and the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965).

### EIA Regulations

The requirements include compliance to the Environmental Impact Assessment (EIA) Regulations published in April 1998 (promulgated in Government Gazette No. 18261, 5 September 1997).

These regulations entail that a scoping exercise be undertaken which must include public participation. Alternative sites must be considered and the best site be identified. The Scoping exercise lead to the submission of a preliminary Environmental Impact Assessment Report to the Department of Environment in the different Provinces (Provincial Government). These Departments will then give guidance regarding the need for a full EIA as part of the permitting process of these facilities. To issue a permit, this Department thus requires a Record of Decision (RoD) or a letter confirming that an exception from an EIA has been given, from the provincial Department of Environment.

### Atmospheric Pollution Prevention Act, 1965

In the case of incinerators air emissions are one of the issues which must be controlled. Most incinerators in South Africa are currently regulated by local authorities in terms of the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965) and the Health Act, 1977 (Act 63 of 1977). The operation of the site and the emissions from the incinerator should be regularly inspected by air pollution staff of these authorities. Conditions are also prescribed for the collection, transportation and storage prior to incineration in terms of the Health Act, 1977 (Act 63 of 1977).

Incineration of waste (including medical and hazardous waste) is listed as a scheduled process in terms of the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965). Scheduled processes are controlled by the Chief Air Pollution Control Officer of the Department of Environmental Affairs and Tourism (DEAT). The listing as a scheduled process will enable the Chief Officer to issue a registration certificate for a specific incinerator on certain conditions. In terms of section 12 of the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965) the registration certificate shall be subject to the condition that all plant apparatus used for the purpose of carrying out the scheduled process in question and all appliances for preventing or reducing to a minimum the escape into the atmosphere of noxious or offensive gases, shall at all times be properly maintained and operated and the holder of the certificate shall ensure that all the necessary measures are taken to prevent the escape into the atmosphere of noxious or offensive gases. The Act also states that due allowance should be made for the unavoidable escape into the atmosphere of noxious or offensive gases during the starting-up of any plant or apparatus in respect of which the registration certificate has been issued or during the period of any breakdown or shut-down or disturbance of such apparatus or plant. The Chief Officer may by written notice require from the holder of such certificate that steps to ensure more effective operation of the appliances be taken. If the permit holder fails to comply with these conditions or requirements within a reasonable time, the Chief Officer may cancel the permit.

The following information is specified in the certificate, in terms of section 11(2) of the

mentioned Act:

- (a) the situation and extent of the proposed building or plant to which the certificate relates;
- (b) the nature of the scheduled process intended to be carried out;
- (c) the raw materials intended to be used, the nature of the operations intended to be carried out and the products intended to be produced;
- (d) the appliances intended to be installed and any other measures intended to be taken with a view to preventing or reducing to a minimum the escape into the atmosphere of any noxious or offensive gases likely to be produced by the operations intended to be carried out; and
- (e) the proposed measures for the purification of the effluents discharged from the appliances installed for preventing or reducing to a minimum the escape into the atmosphere of any noxious or offensive gases for the processes that will be in operation, and for the prevention of the release of noxious or offensive constituents from such effluents when they come into contact with other effluents in drains or drainage canals.

It is clear that the certificate mainly addresses the pollution of air by the incinerator, although the pollution by effluents generated at the plant is also regulated. The incineration of waste can however have an impact on every aspect of the environment - air, soil, surface and ground water, thereby possibly endangering environmental health. It can just be mentioned that medical waste and the residue after the incineration process is regarded as hazardous waste in terms of the Basel Convention.

### 3. PROCESS

The same process as outlined in Figure 1 (page 1-9) of the document "Minimum Requirements for Waste Disposal by Landfill, second edition, 1998" should be applied with the development and permitting of these facilities.

Sites must first be classified according to the type and volume (volume = maximum amount of waste handled/treated/stored per day for which the facility was designed) of waste handled/treated/stored at the specific facility per day. After different locations for the proposed facility have been identified and ranked, a feasibility study on the best alternative site should be conducted. After the confirmation of feasibility has been obtained from the Department of Water Affairs and Forestry (DWAF), the applicant applies for a permit. The required documents (according to the Minimum Requirements for Permitting - see Table 5 of the document "Minimum Requirements for Waste Disposal by Landfill") for that specific class site must then be submitted together with the permit application form. Since the Minimum Requirements are written specifically for waste disposal by landfill the level of detail required for each report/investigation could certainly vary for these waste facilities. In the case of general disposal sites the requirements must be discussed and confirmed with the specific Regional Director of DWAF, but a Design Report, Operation Report, Monitoring

Report and Contingency Plans would always be required. In some instances, additional studies (eg. Geohydrological Report) could be necessary.

#### **4. GUIDELINES TO COMPILE A PERMIT APPLICATION REPORT FOR THE ABOVEMENTIONED WASTE MANAGEMENT FACILITIES**

The Permit Application Report should include the information as required above. Guidelines on the type of information which should be given in this report for DWAF to make a decision whether to grant a permit or not is as follows:

##### Background information

This section must summarise the following aspects:

- A. waste classification and quantities
- B. current waste management system
- C. climatic conditions
- D. description of the proposed facility and environmental overview of conditions at the site

##### A. Waste classification and quantities

The types of waste generated and to be disposed of/treated/stored at the facility should be addressed e.g. whether it is household refuse for the site to be classified as a G site or whether it is hazardous waste for the site to be classified as a H site and the maximum quantities of waste stored/treated/disposed/handled at the facility per day.

This will indicate the classification of the site.

##### B. Current waste management system

This section should address the operational area and the population statistics of the area. It should also address waste collection, transport and existing methods of waste disposal/handling/treatment/storage.

##### C. Climatic conditions

Climatic conditions of the area, rainfall conditions (mean annual precipitation and evaporation rates), prevailing wind directions should be addressed in this section.

It could be that these waste management facilities in terms of the Landfill Classification System indicate that the region is in a water surplus area. A landfill in such an area would be expected to produce leachate and would be designated "B<sup>+</sup>". However, due to the enclosed designs of most of these facilities climatic factors are expected to have little influence on the waste deposited/treated at the facility. Any leachate that may be generated would be the result of the moisture content of the incoming waste. These facilities will thus be classified as "B" sites in most cases.

#### D. Description of the proposed waste management facility and environmental overview

A description of the site location which includes a topocadastral map (1:50 000) indicating the location of the following, where present, within a 5 km radius of the site boundary:

- \* the waste management facility
- \* the area served
- \* existing residential and industrial areas
- \* possible future development
- \* transport route
- \* other waste management facilities in the area
- \* zoning and land use of the waste management facility and surrounding area within a 5 km radius, and
- \* the 1:50 year floodline of all watercourses.

As mentioned earlier in the document a preliminary environmental overview should be undertaken during the Scoping process which *inter alia* addresses the surrounding land uses, the geohydrology in the vicinity of the site, the ecology and conservation worthiness. The land use upon which these waste management facilities are to be developed should be approved and correctly zoned in terms of local and provincial legislation. Most probably no detailed geohydrological investigation/report will be required as part of the permit application for the above-mentioned waste management facilities.

Detailed reports of the following will be required and should be attached to the permit application:

- \* Design report,
- \* Operation and Monitoring report
- \* Contingency plans
- \* Environmental Impact Control Report (only if an EIA is required - consult with DWAF departmental officer and Department of Environment, Provincial Government).

#### Design report

This report should address:

- \* infrastructure requirements,
- \* stormwater and leachate management requirements, and
- \* odour control.

#### Operation Plan

An overview of the proposed operation of the waste management facility should be given. The following aspects should be addressed:

- \* Equipment description and Maintenance
- \* Staffing requirements
- \* Screening and acceptance of waste
- \* Waste handling, loading, compaction operation

- \* Waste Auditing and Reporting Procedures
- \* Traffic Control
- \* Environmental Control

Transportation and final disposal operations should be included in the above plan.

In addition to the above, the Operation Plan should also address the following aspects:

- \* Safety and Emergency Response
- \* Fire Prevention

A description of the facility e.g. existing infrastructure, ablution facilities, a dedicated telephone etc. should also be addressed.

The Operation Plan should also address access control to the site.

The general management of these waste management facilities will ensure the control of nuisances. Special measures to ensure good management must be addressed in the Operation Plan.

Such measures may include:

- \* No unauthorised discharging of waste at the facility
- \* No waste picking
- \* Roadways and other surfaces must be cleaned immediately after discharge where necessary etc.

#### Monitoring Plan

A Monitoring plan should be drawn up and implemented to ensure that the site conforms to permit requirements. Critical aspects to be monitored are:

- \* Types of incoming waste
- \* Excessive leachate production, and
- \* Cleanliness and odours

In addition the equipment must be monitored during use to ensure it is in good running order.

#### Environmental Impact Control Report

Should an EIA be required and/or if potential environmental impacts be identified during the Environmental Scoping process an Environmental Impact Control Report should be compiled which must address these impacts. In many cases, the impacts identified at these facilities are ground and surface water pollution, odour and visual impacts. These impacts must be addressed in the design and management of the site.

#### Environmental Consequences of failure assessment and report

Pollutants can escape into the surrounding environment via surface water, groundwater and/or air/wind flow. Measures to prevent floodwater from entering the facility should be

addressed. Storage areas should be built above minimum allowable floor level. In the case of groundwater pollution, measures should be in place to prevent leachate and contaminated stormwater from entering the surrounding environment. Drainage systems should be described in detail. If leachate and contaminated stormwater is pumped to municipal sewers, the approval letter from the municipality should be submitted together with the permit application.

Good management of waste management facilities does not require odour control. The situation should however be monitored and if problems arise due to odours the permit holder should respond immediately in an appropriate manner. Methods are aerosol deodorisers, biological filtration and chemical scrubbing.

A Response Action Plan should also be submitted if stoppage in the operation of the specific waste management facility will have an environmental impact.

## 5. CONCLUSION

This document only gives broad guidelines with regard to the permit application process applying to disposal facilities. *Ad hoc* exceptions to these broad guidelines may apply. Of importance is that the legal principles mentioned here and the objectives of the Minimum Requirements must however always apply.

It is important to note that the Department does not approve technologies, but issue permits for the use of such technologies in which performance criteria are set. Incinerators must for example be licensed by the Department of Environmental Affairs and Tourism first before a permit for such a "disposal site" will be considered by the Department.

Permits which will be issued for these facilities could be an abbreviated or amended version of the standard disposal site permit and conditions which are applicable to the specific facility will be included.

**ANNEXURE FOUR**

**WASTE GENERATOR  
SAMPLE AUDIT CHECKLIST**

## WASTE GENERATOR SAMPLE AUDIT CHECKLIST

Date:	Rating Legend	
Auditors:	Yes (compliant)	Y
	No (non-compliant)	N
	Observation	O
	Not Applicable	N/A

No.	Requirements	Rating	Comments
<b>Section One: Legal Requirements and Waste Generators Responsibilities</b>			
1.1	Is there written notification to the Head of Dept. of the use of a private waste management contractor?		
1.2	Is the private waste management contractor approved by the Council?		
1.3	Is there written permission of the Head of Dept. for selling of recyclable wastes to the waste recycling company?		
1.4	Is there written consent from the Medical Officer of Health for food wastes removed for animal consumption?		
1.5	Has the Head of Dept been informed in writing of the disposal of special industrial wastes (liquids and sludges)?		
1.6	Have any changes to the composition / quantity / storage arrangements / removal / disposal been communicated to the Head of Dept. in respect of the disposal of special industrial wastes (liquids and sludges)?		
1.7	Is there a valid Trade Effluent Discharge permit on file – if applicable?		
1.8	Is there written permission on file from eThekweni Water and Sanitation for the road transport of waste effluent to the eThekweni Municipality Southern Works facility?		
1.9	Is there a copy of the Scheduled Trade permit on file – if applicable?		
1.10	Are the requirements detailed in the Scheduled Trade permit incorporated into Environmental Management Programmes on site?		
1.11	Has a water use licence been obtained (if applicable) and is a copy kept on file?		

No.	Requirements	Rating	Comments
1.12	Has a S20 ECA permit been obtained for waste storage on site?		
1.13	Are copies of the required permits (or exemptions) of the landfill sites, waste transfer stations, recycling and treatment facilities used kept on file (including Scheduled Trade permits, Trade Effluent Discharge permits, Certificates of Registration and Planning Permissions)		
1.14	Do the copies of the above permits (or exemptions) include the relevant attached conditions (what the waste facility is permitted to handle / specified wastes that are not permitted)?		
1.15	Do the hazardous waste transporters have insurance cover based on the hazard and risk of the substances carried (including cover civil liability and recovery and rehabilitation costs) and is a copy kept on file and is it periodically checked for validity?		
1.16	Are employees trained on how to identify hazardous wastes, requirements for separating hazardous wastes from general, non-hazardous wastes, correct waste handling and storage procedures and the labelling of containers storing hazardous wastes?		
1.17	Have employees been trained on the safe disposal requirements for asbestos, lead and medical wastes (hazardous biological agents)?		
1.18	Are employees trained on emergency response procedures such as spillages or leakages?		
<b>Section 2: Waste Identification and Classification</b>			
2.1	Has a waste inventory been developed and is it used to track wastes on a monthly basis?		
2.2	Are copies of relevant MSDS's for hazardous wastes on file?		
2.3	Are copies of laboratory analyses for hazardous wastes on file?		
2.4	Are waste classification reports (including those for treated residues) kept on file?		
2.5	Do you keep copies of communications with the waste management contractor regarding the waste classification issues relating to each waste stream?		
2.6	Has written permission been obtained for the disposal of de-listed waste streams at a lower-category landfill site / delisting authorisations on file where applicable?		

No.	Requirements	Rating	Comments
2.7	Have disposal / recycling / treatment options been identified and evaluated to ensure environmental impacts are minimised for each waste stream generated?		
<b>Section Three: Waste Handling and Storage on Site</b>			
3.1	Are wastes stored on site in a manner that prevents pollution?		
3.2	Is the housekeeping in the waste area of a high standard; is the waste area clean and hygienic – no overflowing / leaking / “smelly” containers?		
3.3	Are non-hazardous and hazardous waste streams separated?		
3.4	Is there appropriate signage including pictures, constituents and hazards designating where each waste stream may be stored?		
3.5	Are waste streams segregated into paper, plastic, cardboard, timber, metal wastes, empty drums, general dry non-hazardous waste and liquid wastes / sludge wastes?		
3.6	Is the date that storage commenced marked on hazardous waste containers?		
3.7	Are waste containers stored on a hard surface away from storm water drains?		
3.8	Are hazardous waste containers stored in appropriately bunded areas?		
3.9	Are MSDS available for hazardous wastes at the storage areas?		
3.10	Are the relevant permits on file for waste handling and storage on site?		
3.11	Is there a procedure in place to ensure waste containers are collected prior to reaching full capacity?		
3.12	Are work instructions for hazardous tasks eg crushing of fluorescent tubes displayed in the hazardous waste area?		
3.13	Is the waste area secured to prevent unauthorised access and removal of waste?		
3.14	Are permits available for the storage of flammable waste materials?		
3.15	Are the effects of any pollution or degradation caused by the storage of waste on site remedied?		
<b>Section Four: Loading and Transportation of Hazardous Wastes Off-Site</b>			
4.1	Are hazardous waste streams correctly classified for transportation as per SANS 10228?		

No.	Requirements	Rating	Comments
4.2	Are hazardous waste streams correctly packaged / contained for transportation as per SANS 10229 and SANS 10233?		
4.3	Is the waste operator registered with the Department of Transport as a Dangerous Goods Operator and is the operator's card displayed on the vehicle windscreens and trailer chassis?		
4.4	Does the operator ensure that the drivers have valid professional driving permits (PrDP-D) for dangerous goods?		
4.5	Are the drivers trained by an approved training body on an annual basis?		
4.6	Has a dangerous goods loading supervisor been appointed in writing?		
4.7	Is the loading of hazardous wastes carried out under supervision of a dangerous goods loading supervisor? What checks are carried out before loading and before the vehicle is allowed to leave the site?		
4.8	Are empty chemical drums/containers removed for re-processing / recycling nominally empty?		
4.9	Is the driver supplied with a nominally empty chemical drum/container certificate for empty chemical drums/containers removed for re-processing / recycling?		
4.10	Does the driver have a certificate of registration for the transportation of flammable waste liquids if required?		
4.11	Does the load of flammable waste liquids being despatched comply with the conditions stipulated on the certificate of registration?		
4.12	Does the operator provide route plans to the drivers?		
4.13	Do the drivers have a procedure to report accidents?		
4.14	Are written reports completed and forwarded to the Department of Transport: Dangerous Goods Inspectorate within 24 hours of an incident?		
4.15	Does the operator provide the drivers with the correct transport emergency cards for each hazardous waste stream?		
4.16	Are the transport emergency cards generated by the CEFIC system or in accordance with SANS 10232-4?		
4.17	Are the transport emergency cards valid, in the correct format, clean and legible?		

No.	Requirements	Rating	Comments
4.18	Does the operator provide safety equipment to the drivers in accordance with the information on the transport emergency cards?		
4.19	Are the drivers trained to use the safety equipment with which they have been provided?		
4.20	Are the transport emergency cards and the dangerous goods declarations kept in the drivers cabs in designated, labelled, easily accessible orange containers?		
4.21	Are the correct type and quantity of placards fitted to the vehicles transporting hazardous wastes/		
4.22	Do the waste manifest documents include the following content:		
	- heading Dangerous Goods Declaration		
	- proper shipping name as per SANS 10228		
	- the UN number with the word "WASTE" added		
	- the hazard class and packing group where applicable		
	- the quantity and type of packaging or the word "BULK" where applicable		
	- the gross mass and the net mass or volume of the goods		
	- the names and contact details of the consignor, operator and consignee		
	- a declaration of the content, classification, packaging and labelling signed by the consignor		
	- a declaration that the consignment has been received and the relevant placards and documentation is in place – signed by the driver		
4.23	Are the waste manifest documents signed by the persons responsible for the generation of the wastes?		
4.24	Are copies of waste manifests bearing the generator's signature, the driver's signature, a signature from the landfill site / recycling facility / treatment facility as well as the landfill site / recycling facility / treatment facility reference number allocated to the load kept on file?		
4.25	Are copies of safe disposal certificates detailing weighbridge numbers or receipt numbers issued by the receiving facility kept on file?		

No.	Requirements	Rating	Comments
<b>Section Five: General</b>			
5.1	Are signed, dated waste management contracts in place with each of the waste management contractors?		
5.2	Are copies of waste contractors audit reports kept on file?		
5.3	Are concerns raised during waste contractors audits communicated to the waste contractors in writing?		
5.4	Is there a documented, signed waste management policy?		
5.5	Does the waste management policy address the following issues:		
	- compliance with all applicable waste management legislation and regulations		
	- conducting waste audits to identify, document and classify all waste streams generated		
	- incorporating waste minimisation practices into all waste generating activities and operational procedures		
	- only using disposal as a last resort		
	- designation of on-site intermediate waste storage facilities and maintenance of these facilities to prevent impact on health and safety of employees and surrounding environment		
	- setting of annual waste reduction targets and maintaining waste performance records		
	- addressing cradle-to-grave responsibilities – evaluating and monitoring waste management contractors for legal compliance		
	- maintaining auditable waste management documentation		
5.6	Have waste management procedures / work instructions been developed?		
5.7	Are there documented procedures for conducting on-site waste management audits and audits of waste management contractors?		

## **ANNEXURE FIVE**

### **INTERMEDIATE WASTE CONTRACTOR SAMPLE AUDIT CHECKLIST**

## INTERMEDIATE WASTE CONTRACTOR SAMPLE AUDIT CHECKLIST

<b>Date:</b>		<b>Rating Legend</b>	
<b>Auditors:</b>		Yes (compliant)	Y
		No (non-compliant)	N
		Observation O	
		No (non-compliant)	N

No.	Requirements	Rating	Comments
<b>Section One: Requirements and Intermediate Waste Contractors Responsibilities</b>			
1.1	Are you registered as an intermediate waste contractor with the Head of Dept?		
1.2	Is there written permission of the Head of Dept. for selling of recyclable wastes to the waste recycling company?		
1.3	Is there written consent from the Medical Officer of Health for food wastes removed for animal consumption?		
1.4	Has the Head of Dept been informed in writing of the disposal of special industrial wastes (liquids and sludges)?		
1.5	Have any changes to the composition / quantity / storage arrangements / removal / disposal been communicated to the Head of Dept. in respect of the disposal of special industrial wastes (liquids and sludges)?		
1.6	Has written approval been obtained from the Head of Dept. for the disposal of builder's refuse for land reclamation if required?		
1.7	Have environmental authorisations been obtained for listed activities in terms of the EIA Regulations and did the application process include the following:		
	- basic assessment		
	- scoping and environmental assessment process		
	- appointment of an Independent Environmental Assessment Practitioner and public participation process		
1.8	Have conditions attached to Environmental Authorisations been included in environmental management programmes?		

No.	Requirements	Rating	Comments
1.9	Is a valid Section 20 permit available / exemption and on file?		
1.10	Do you have a valid Scheduled Trade permit on file?		
1.11	Has a responsible person been tasked with ensuring compliance and reporting requirements (including reporting of incidents to the local authority) of the Scheduled Trade Permit are met?		
1.12	Is written approval obtained from the eThekweni Health Department for any changes / modifications to processes prior to implementation?		
1.13	Are the required facilities for discharging effluent to sewer in place?		
1.14	Is there a valid Trade Effluent Discharge permit on file?		
1.15	Is storm water separated from sewer discharge?		
1.16	What measures are taken to ensure that storm water is not contaminated and is sampled to ensure pollution prevention measures are adequate?		
1.17	Are non-conforming discharges reported to eThekweni Water and Sanitation within 12 hours of the incident occurring?		
1.18	Has prior written approval from eThekweni Water and Sanitation been obtained for changes / modifications to processes that change effluent composition?		
1.19	Are monthly maximum discharge volumes adhered to?		
1.20	Has prior written permission been obtained from eThekweni Water and Sanitation for increases required in monthly discharge volumes?		
1.21	Have amendments to the Certificate of Registration been granted for changes in storage arrangements of flammable wastes (increases / decreases)?		
1.22	Are fire incidents involving flammable wastes that caused damage to property or injury to persons reported to eThekweni Fire and Emergency Services?		
1.23	How do you ensure that flammable liquids are not discharged to waste effluent, storm water or sewer drains?		
1.24	Are vehicles transporting hazardous wastes registered with the Department of Transport as Dangerous Goods Carriers?		

No.	Requirements	Rating	Comments
1.25	Are valid Category D Operators Cards displayed on the windscreens of vehicles transporting hazardous wastes and valid Category G Operators Cards displayed on the windscreens of vehicles transporting general wastes?		
1.26	Are sub-contractors transporting hazardous waste checked for compliance?		
1.27	Are there valid Certificates of Registration for each vehicle transporting flammable wastes and do the loads being transported comply with the Certificates of Registration?		
1.28	Are valid Haulier's permits available for the transportation of trade or domestic effluent to the various Council waste water treatment facilities?		
1.29	Have sub-contracted transporters of effluent issued Indemnity Forms in terms the Haulier's Permits to the intermediate waste contractor and to eThekwini water and Sanitation?		
1.30	Do the generators of the effluent discharged to Southern Waste Water Treatment Works also have permits to do so?		
1.31	Are the load delivery books completed to regulate and track deliveries of effluent from source to final disposal?		
1.32	Has a water use licence been obtained if applicable and is a copy kept on file?		
1.33	Are copies of the required permits (or exemptions) of the landfill sites, waste transfer stations, recycling and treatment facilities kept on file?		
1.34	Do the copies of the above permits (or exemptions) include the relevant attached conditions (what the waste facility is permitted to handle / specified wastes that are not permitted)?		
1.35	Are the relevant employees aware of the attached conditions?		
1.36	Are employees trained on how to identify hazardous wastes, requirements for separating hazardous wastes from general, non-hazardous wastes, correct waste handling and storage procedures and the labelling of containers storing hazardous wastes?		
1.37	Have employees been trained on the safe disposal requirements for asbestos, lead and medical wastes (hazardous biological agents)?		
1.38	Are employees trained on emergency response procedures such as spillages or leakages?		
1.39	Are you actively pursuing waste prevention and minimisation programs?		

No.	Requirements	Rating	Comments
1.40	Have employees been trained in good housekeeping practices and waste minimisation?		
1.41	Are residual wastes from your recycling / treatment processes classified and disposed of at the correct landfill site in compliance with their permit conditions?		
<b>Section Two: Intermediate Waste Contractor / Waste Generator Interface</b>			
2.1	Has the following information being obtained from the clients with respect to their wastes:		
	- waste type (hazardous/non-hazardous, liquid/sludge/solid, hot/cold, consistent/variable)		
	- volumes generated (estimated / actual)		
	- MSDS's		
	- waste procedures and related documentation		
	- waste constituents, physical properties, hazards and storage		
	- laboratory analysis and waste classification reports		
2.2	Are waste assessments conducted at the client's premises?		
2.3	Are sales and management personnel trained in identifying hazardous wastes?		
2.4	Do you educate your clients on what wastes can go into what containers and safe filling levels?		
2.5	Are the contents of all drummed wastes checked on your client's premises?		
2.6	Are the conditions of drums containing hazardous waste checked (bulging/ rusted / labelling) and are badly rusted drums repacked / contained in overdrums?		
2.7	Have you familiarized yourself with the client's processes and procedures, process hazards and emergency response procedures?		
2.8	Do you have signed contracts with your clients?		
2.9	Do you provide a letter of good standing from the Compensation Commissioner to your clients?		
2.10	Are your employees inducted / trained on the client's safety, health and environmental hazards, rules and other requirements?		

No.	Requirements	Rating	Comments
2.11	Do your employees undergo medical screening and routine assessments for exposure?		
2.12	Do your employees wear appropriate personal protective equipment as required by the client?		
2.13	Are you and your familiar with your client's reporting requirements for incidents and near-misses and has someone been allocated this responsibility?		
<b>Section Three: Waste Classification</b>			
3.1	Have the waste streams that you handle been classified?		
3.2	Are copies of relevant MSDS's for hazardous wastes on file?		
3.3	Are copies of laboratory analyses for hazardous wastes on file?		
3.4	Are waste classification reports (including those for treated residues) kept on file?		
3.5	Has written permission been obtained for the disposal of de-listed waste streams at a lower-category landfill site / delisting authorisations on file where applicable?		
<b>Section Four: Health and Safety</b>			
4.1	Has a health and safety management system been implemented?		
4.2	Are risk assessments carried out?		
4.3	Have written procedures / work instructions been developed for hazardous tasks related to waste management?		
4.4	Have employees (temporary and permanent), contractors and sub-contractors, visitors and clients been trained on hazards and risks associated with your waste management operations including measures to be taken to prevent incidents?		
4.5	Are internal health and safety audits carried out including job observations?		
4.6	Has a corrective action system been implemented to ensure continuous improvement?		
4.7	Are incidents and near-miss incidents recorded and investigated and are countermeasures implemented to prevent recurrence?		

No.	Requirements	Rating	Comments
4.8	Are the following records maintained:		
	- risk assessments		
	- workplace inspections / audits		
	- training records		
	- incident reports and corrective actions		
	- occupational hygiene surveys conducted by Approved Inspection Authorities?		
	- medical surveillance records		
	- legal appointments		
	- health and safety committee meeting minutes		
	- health and safety workplace inspections		
	- statutory equipment inspection records and registers		
4.9	Are procedures in place to protect staff from risks involved in storing, transporting, handling and treating hazardous wastes?		
4.10	Have personal protective equipment and respirator protective equipment been provided to employees relevant to their scope of work?		
4.11	Are there safe working procedures for vehicles and equipment operation?		
4.12	Are containers covered prior to being loaded onto the vehicles?		
<b>Section Five: Loading, Transportation and Offloading of Hazardous Wastes</b>			
5.1	Do you ensure that your clients have correctly classified and packaged the wastes in terms of SANS 10228, SANS 10229 and SANS 10233?		
5.2	Do you ensure that the drivers have valid professional driving permits (PrDP-D) for dangerous goods?		
5.3	Are you registered with the Department of Transport as a Dangerous Goods Operator and is the operator's card displayed on the vehicle windscreens and trailer chassis?		
5.4	Do you notify the emergency services and provide them with the information of the products that you are transporting through their local authority area?		

No.	Requirements	Rating	Comments
5.5	Are the drivers trained by an approved training body on an annual basis?		
5.6	Have you provided a route plan to your drivers?		
5.7	Are you providing safety equipment to your drivers in accordance with the information on the transport emergency card?		
5.8	Are your drivers trained to use the safety equipment that has been issued to them?		
5.9	Do you have insurance cover in place for civil liability and recovery and rehabilitation costs based on the hazard and risk of the substances carried?		
5.10	Have the drivers been trained in safe loading procedures?		
5.11	Is loading carried out by a qualified person, trained in the relevant procedures, under the supervision of a dangerous goods loading supervisor?		
5.12	Do you use checklists to confirm compliance?		
5.13	Is off-loading carried out by a qualified person, trained in the relevant procedures, under the supervision of a dangerous goods loading supervisor?		
5.14	Do the waste manifest documents include the following content:		
	- heading Dangerous Goods Declaration		
	- proper shipping name as per SANS 10228		
	- the UN number with the word "WASTE" added		
	- the hazard class and packing group where applicable		
	- the quantity and type of packaging or the word "BULK" where applicable		
	- the gross mass and the net mass or volume of the goods		
	- the names and contact details of the consignor, operator and consignee		
	- a declaration of the content, classification, packaging and labelling signed by the consignor		
- a declaration that the consignment has been received and the relevant placards and documentation is in place – signed by the driver			

No.	Requirements	Rating	Comments
	- a declaration that the consignment has been received at the disposal / recycling / treatment facility – signed by the waste facility - and includes a reference number unique to the load that is delivered.		
5.15	Do you provide your drivers with the correct transport emergency cards for each hazardous waste load transported?		
5.16	Are the transport emergency cards generated by the CEFIC system (TREM CARD) or in accordance with SANS 10232-4 (TREC)?		
5.17	Are the transport emergency cards valid, in the correct format, clean and legible?		
5.18	Are the transport emergency cards and the dangerous goods declarations relating to the current loads kept in the drivers' cabs in designated, labelled, easily accessible orange containers?		
5.19	Are the correct type and quantity of placards fitted to the vehicles transporting hazardous wastes as follows:		
5.20	Do the vehicles carrying hazardous wastes display the orange warning diamonds?		
5.21	Do the vehicles transporting hazardous wastes comply with the design and construction requirements as per SANS 10318?		
5.22	Are the following vehicle inspections carried out as per SANS 10231:2006: Annexure E:		
	- basic inspections as per schedule E.1		
	- daily inspections as per schedule E.2		
	- six-monthly inspections as per schedule E.3 – in-house inspection and roadworthiness		
5.23	Is there a regular preventative maintenance schedule for the vehicles and are detailed records for each vehicle kept?		
5.24	For vehicles that have had major maintenance, is the inspection schedule in E.1 completely restarted?		
5.25	Do the drivers have a procedure to report incidents?		
5.26	Are written reports completed and forwarded to the Department of Transport: Dangerous Goods Inspectorate within 24 hours of an incident?		
5.27	Are clients notified of incidents occurring during the transportation of their wastes?		

No.	Requirements	Rating	Comments
5.28	Are empty drums / containers transported for recycling nominally empty and have you / your clients supplied nominally empty certificates every time the drums / containers are sent for re-processing as per SANS 10406 Annexure B?		
5.29	Are containers and vehicles transporting hazardous chemical substances such as asbestos, lead and hazardous biological agents (medical waste) clearly identified, classified and packed in accordance with SANS10228 and SANS 10229?		
5.30	Are all vehicles, re-usable containers and covers which have been in contact with hazardous chemical substances such as asbestos, lead and hazardous biological agents (medical waste) cleaned and decontaminated after use?		
5.31	Does each of your vehicles transporting flammable goods have Certificates of Registration and are the conditions of the certificates complied with?		
5.32	Do you provide your clients with safe disposal certificates and do they include waste manifest numbers and the unique numbers provided by the waste facilities?		
<b>Section Six: Waste Storage, Handling and Classification On-Site</b>			
6.1	Do you have MSDS's or waste classification reports for all wastes being managed on your premises?		
6.2	Have you implemented a responsible container management program if you use and discard empty drums?		
6.3	Do you have the relevant permits for waste handling and storage on site?		
6.4	Do your facilities have the necessary controls to prevent environmental pollution?		
6.5	Are all hazardous waste containers labelled as to their contents?		
6.6	Are hazardous wastes stored in leakproof containers?		
6.7	Are bulk storage containers situated within bunds that can hold 110% of the contents of the storage tanks / 110% of the volume of the largest tank if there is more than one tank in the bund?		
6.8	Is there a procedure in place detailing how to manage water collected in the bund?		
6.9	Are the waste storage areas clean and hygienic?		

No.	Requirements	Rating	Comments
6.10	Are containers stored on hard surfaces away from storm water drains?		
6.11	Are containers appropriately sized and designed to prevent overfilling and spillages?		
6.12	Are waste containers regularly emptied to prevent overflows?		
6.13	Are waste containers covered to prevent filling with rainwater?		
6.14	Are hazardous wastes stored in containers that are appropriate for their contents to prevent leaks and spillages?		
6.15	Are hazardous waste containers labelled to show their contents during storage and transportation?		
6.16	Are hazardous waste containers marked with accumulation start dates?		
6.17	Are liquid / sludge wastes containers stored on hard surfaces and in bunded areas?		
6.18	Are the contact names and phone numbers of the emergency coordinators and other responsible personnel on site displayed in the hazardous waste storage areas?		
6.19	Are fire extinguishers placed in strategic locations near the hazardous waste storage areas?		
6.20	Is spill containment equipment easily accessible?		
6.21	Are work instructions for hazardous tasks (eg crushing of fluorescent tubes) displayed in hazardous waste storage areas?		
6.22	Are there signs to designate where each waste stream is stored including the constituents and hazards?		
6.23	Are Certificates of Registration available for the storage of flammable materials and flammable wastes and are these certificates displayed at appropriate locations on site?		
6.24	Do the emergency response procedures include incidents that may arise from the storage of flammable wastes?		
6.25	Do you have mass balance controls for wastes that are taken through your premises for processing, recycling, treatment and disposal?		

No.	Requirements	Rating	Comments
<b>Section Seven: Client Contracts</b>			
7.1	Are signed, dated contracts in place with each of your clients?		
7.2	Do the client contracts include the following:		
	- roles, responsibilities and reporting structures of all parties		
	- responsibilities and procedures to be followed in the event of an incident / emergency		
- clauses related to legal compliance with the relevant applicable legislation including Asbestos, Lead and Hazardous Biological Agent Regulations?			
<b>Section Eight: Waste Management Policies and Procedures</b>			
8.1	Is there a documented, signed waste management policy?		
8.2	Have waste management procedures / work instructions been developed?		
8.3	Have employees (temporary and permanent) and sub-contractors been trained on the established waste management procedures and work instructions?		
<b>Section Nine: Audits</b>			
9.1	Are there documented procedures for conducting on-site audits and audits of sub-contractors and waste facilities?		
9.2	Are regular internal audits carried out?		
9.3	Do you audit the waste facilities that you use?		
9.4	Are concerns raised during waste facility and sub-contractor audits communicated to the facilities and sub-contractors in writing?		

## **ANNEXURE ONE**

# **POLICY ON THE HANDLING AND DISPOSAL OF ASBESTOS AND ASBESTOS CONTAINING WASTE IN TERMS OF SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989)**

# **POLICY ON THE HANDLING AND DISPOSAL OF ASBESTOS AND ASBESTOS CONTAINING WASTE IN TERMS OF SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989)**

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## **1. Purpose of Policy**

The purpose of this policy is to provide clarity regarding the handling and disposal of asbestos containing waste (ACW), both when disposing in a mono-disposal site, i.e. a site specifically design for asbestos, or a co-disposal site.

## **2. Introduction**

Asbestos is an indigenous fibrous mineral that has been mined in a number of sites in Southern Africa and, because of its excellent resistance to heat, has been used for the manufacture of various products since the 1900's (see section 4). Many studies have described a link between occupational exposure to various types of asbestos and lung cancer and associated diseases and has therefore been designated as a *known human carcinogen*. This carcinogenic activity is directly linked to the air pathway and ingestion of the fibres when swallowed in water does not carry any associated cancer risks. Asbestos shows a slight solubility in water and the natural fibres tend to become blunted on a molecular scale thus greatly reducing the associated cancer risk. Water therefore serves as a natural route for the removal of fibres from the air and as a mechanism to suppress the emission of fibres into the air environment.

## **3. Legislative Framework**

The disposal of asbestos is controlled under section 20 of the Environmental Conservation Act, 1989. This section states that waste may only be disposed on a site that is permitted by the Department of Water Affairs and Forestry. Other applicable legislation includes the:

- \* Occupational Health and Safety Act (OHSA) (Act 85 of 1993)
- \* The Asbestos Regulations (R773 of 10 April 1987) promulgated under the OHSA
- \* Mine Health and Safety Act (Act 101 of 1993)
- \* National Environmental Management Act (Act 107 of 1998)

The Department of Water Affairs and Forestry (DWAF) is committed to the principles of co-operative governance, therefore the handling and disposal of asbestos must take into account other applicable legislative requirements.

## **4. Sources and Classification of Asbestos Containing Waste**

Asbestos containing waste (ACW) is divided into four hazard classes, A to D, table 1. The major types and are given in table 1:

Table 1: Classes of ACW and examples of waste falling each class:

ACW Hazard Call	Examples of ACW
<p><b>Class A:</b> Any friable ACW</p>	<p>Raw asbestos (e.g. asbestos damaged in transit or no longer required).</p> <p>Bags previously used to transport raw asbestos (that have not been melted into a solid mass).</p> <p>Asbestos insulation, limpet spray of pipe lagging removed from power stations, buildings, boilers or pipe works.</p> <p>Pure asbestos rope or textiles</p>
<p><b>Class B:</b> Any non-friable ACW that has become crumbled, pulverised or reduced to powder during manufacturing, installation, renovation or demolition operations, such that it is likely to release fibres into the air.</p>	<p>Dry swarf or cutting dust from the asbestos cement or friction material production process.</p> <p>Used filter bags from dust extraction units at the workplace.</p> <p>Asbestos cement that has unavoidably been crumbled, pulverised, or reduced to powder during demolition operations.</p> <p>Disposal equipment and clothing contaminated with asbestos.</p>
<p><b>Class C:</b> Any Class B ACW that has been adequately wetted or otherwise encapsulated such that it will not release fibres into the air</p>	<p>Wet swarf or cutting dust from the asbestos-cement or friction material production process.</p> <p>Sludge, slurry or wet waste from the production process.</p> <p>Bags previously used to transport asbestos that have been melted into a solid mass in an autoclave.</p>
<p><b>Class D:</b> Any non-friable ACW that is essentially in the same condition as when manufactured and is unlikely to release respirable fibres after being declared a waste product.</p>	<p>Asbestos cement sheets or pipes.</p> <p>Off cuts of asbestos-cement sheets or pipes.</p> <p>Disused friction products such as gaskets, brake pads or clutch plates</p>

In table 1, the potential hazard or risk associated with the release of fibres, see section 5, is highest in class A and decreases to class D, where the risk posed by the waste is extremely small.

A similar approach is used by the US EPA which has published a document in terms of their National Emissions Standards for Hazardous Air Pollutants (NESHAP) [1], in which they define a number of important terms and conditions for asbestos products, i.e.

***Friable Asbestos Material:*** is any material containing more than 1 % asbestos as determined using Polarised Light Microscopy (PLM), that when dry, can be crumbled, pulverised, or reduced to powder by hand pressure.

***Asbestos Containing Waste Material:*** includes mill tailings or any waste that contains commercial asbestos. The term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial

asbestos.

***Non-friable asbestos Containing Material:*** is any material containing more than 1 % asbestos as determined by Polarised Light Microscopy (PLM), that when dry, cannot be crumbled, pulverised, or reduced to powder by hand pressure.

Note that in the US EPA definition a material must contain more than 1 % asbestos before it falls into the hazard category, which is similar to the proposed class A, ACW. However, due to the problems associated with this analysis, it is proposed that waste is even suspected of containing asbestos that is friable, be considered for class A.

## 5. **Toxicity and Hazard Rating**

Asbestos is classified as HG1, an extreme hazard, in terms of the Minimum Requirements for the Classification, Handling and Disposal of Hazardous Waste because it is a Group A carcinogen, i.e. it has definitely been shown to cause cancer in humans [2-3]. The fibres, which may not be present in all forms of asbestos, can cause lung and other forms of cancer. Six groups of asbestos fibres are recognised and these are further divided into two main groups, i.e. amphibole-asbestos and serpentine-asbestos. The latter, which is commonly known as white asbestos, is chrysotile, whereas the blue or amphibole asbestos group includes crocidolite, amosite, tremolite, actinolite and anthophyllite. Blue asbestos is classified as class 9(II) in terms of SABS 0228 and white asbestos as class 9(III) [3].

All forms of asbestos are assumed, in terms of the precautionary principle, to be extremely hazardous, HGI, i.e. to be a class A ACW, until proven otherwise. However, in the Minimum Requirements [2], it is a fundamental principle that a waste can be downgraded or “delisted”, if it can be shown that the concentration or availability of the hazardous component is below an acceptable risk limit. Provided the ACE is probably hazardous only because of its potential to release fibres and there are no other hazardous components, e.g. leachable heavy metals, then if no fibres are released above the accepted action level, it can be considered non-hazardous and delist.

The accepted action level for determining whether an ACW is hazardous is that defined in the Occupational Health and Safety Act (Act 85 of 1993) as the ability to release “0.5 regulated asbestos fibres per millilitre”. A regulated asbestos fibre means “a particle of asbestos with a length to diameter ratio greater than 3 to 1, a length greater than five micrometers ( $\mu\text{m}$ ) and a diameter less than 3  $\mu\text{m}$ .” The four classes of ACW are further defined below.

A **Class A, ACW** is that which has been shown to or because of its origin or form (table 1) is suspected to give off regulated fibres above 0.5 per millilitre and is classified as extremely hazardous, HGI.

A **Class B, ACE** is one that because of its origin may be not hazardous due to the release of regulated fibres but tests for fibres have not been conducted. Therefore, it is classified as an extreme hazard, HGI in terms of the precautionary principle.

A **Class C, ACW** is one that, because of its origin or form (table1), or because of treatment, e.g. by cementation, by containment in sealed drums or bags and/or is adequately wetted (section 6.2.1) cannot give off regulated fibres or the numbers of regulated fibres have been shown to be below the legal action level of 0.5 per millilitre. A Class C, ACW is not hazardous due to the production of regulated fibres and therefore delists in terms of the

Minimum Requirements [2].

A Class D, ACW is one that, because of its origin or form (table 1), i.e. one that is manufactured and has been adequately demonstrated to not give off regulated fibres above 0.5 fibres/ millilitre. As a precaution, treatment, e.g. by wetting prior to disposal, must be done. A Class D, ACW is not hazardous due to the production of regulated fibres and therefore delists in terms of the Minimum Requirements [2].

Asbestos is normally inert to the leaching of heavy metals and other hazardous species, but a TCLP or Acid Rain leaching test must be done, if contamination with other hazardous species is suspected due to its prior use or subsequent contamination.

## 6. Approved Treatment and Disposal Methods

All operational procedures must be in accordance with the Asbestos Regulations

### 6.1 Waste Minimisation

In accordance with the National Environmental Act (Act 107 of 1998), the Department of Water Affairs and Forestry will encourage any procedures that result in the avoidance and/or recycling of asbestos waste. Recycling of waste produced within the production process is preferred and only unavoidable waste should be disposed. The utilisation and destruction of asbestos, when used as part of the feedstock into cement kilns or incineration processes, may be acceptable, but application for a permit must be made to the Department of Water Affairs and Forestry and the Department of Environmental Affairs and Tourism.

### 6.2 Treatment Technologies

#### 6.2.1 Wetting

*The major technology used to minimise the formation of asbestos fibres is to wet it normally with water. The US EPA has defined the term “Adequately Wetted”, when water is used to control the emissions of particulate asbestos [1] and this terminology has been accepted for use in South Africa.*

*“Adequately wetted means to sufficiently mix or penetrate the ACW with liquid to prevent the release of airborne fibres. Suitable liquids include a wetting agent, amended water (water to which surfactant chemicals have been added, such as a 50:50 mixture of polyoxyethylene ester and polyoxyethylene ether in a 0,16 % solution of water) or plain water.”*

The ACW should be visibly wet and, if bagged, droplets of moisture should be evident. Control procedures, see section 6.3, must be in place to ensure that the ACW is adequately wetted and does not dry out during handling, transport or disposal.

#### 6.2.2 Solidification

Solidification of asbestos wastes can be accomplished utilising cement and

other fixation agents such as water based silicates. Cementation by the addition of Ordinary Portland Cement or other Department of Water Affairs and Forestry approved poliozanic material can be cost effective, particularly Class A and B ACW. Note that cementation into a massive form would result in a Class D ACW. Any procedure must be approved by the Department and include test data on the final product showing that the fibre levels have been reduced to the accepted level.

### 6.3 Landfilling

Application must be made to the Department of Water Affairs and Forestry for permission to dispose asbestos at any site. Information required for full permitting include:

- The design plan for the proposed disposal area;
- A operational plan approved by the Department of Labour that the proposed operating procedures comply with the Asbestos Regulations;
- A rehabilitation plan; and
- Proof of Land Zoning

Asbestos can be disposed to a mono-disposal site or a co-disposal site.

#### 6.3.1 Mono-disposal Sites

A mono-disposal site is one *solely for the purpose of accepting asbestos* and, because asbestos does not pose a pollution risk to water resources, the normal lining requirements for waste disposal facilities, as outlined in the Minimum Requirements for the Disposal of Waste to Landfill [4] do not apply. The liner must be an impregnable layer of at least 500mm, consisting of material such as cement or solidifies ash. A mono-disposal site for asbestos must be closed by covering with a 500mm layer of ash followed by an ashcrete or concrete dome. An ashcrete dome must consist of at least 10 % by mass of cementitious material, be compacted to ~2 % above optimum moisture content and must be 1 metre wider and longer than the trench width and length.

#### 6.3.2 Co-disposal Sites

The Department requires all waste to be treated in order to minimise the risk to human health and the environment. All classes of ACW can be so treated before disposal.

Because Class A, ACW is a known human carcinogen with a hazard rating of 1, and Class B, ACW are potentially hazardous, the Department requires direct disposal of these categories to HH co-disposal sites.

However, all classes of wastes, A to D can be treated before disposal, section 3.2, and

Hh or G Landfills can apply for a permit amendment to accept other forms of asbestos provided that the correct treatment and control procedures are in place or/and the practice of disposal does not constitute a hazard and is fully compatible with the Minimum Requirements.

All sites must be specifically permitted for the acceptance of ACW and application must be made to the Department for an amendment.

The requirements should be discussed with the Regional office of the Department, but permission will not be granted where informal recycling is taking place or where there is any potential for risk to the public or workers. Note that a demarcated area and surveyed area must be set aside for asbestos disposal (see section 6.3.3).

6.3.3 Landfilling Practice. The following practices must be observed:

- ❑ All fibrous material falling into classes A to C (see table 1) must be double bagged in plastic bags with a minimum thickness of 75 microns before the waste is brought to the landfill. Transparent bags are referred, since they allow inspection of the waste to see if it is “adequately etted” without having to undo the bag. This avoids having the operator, auditor or inspector potentially exposed to fibres. Droplets of moisture should be visible on the inside of the bag.
- ❑ Class D wastes (see table 1) that includes larger items such as pipes and boards should be kept wet as a precautionary measure at all times before disposal at the site. Class D wastes should be transported in vehicles or stored should be covered with a tarpaulin and wetted immediately prior to disposal.
- ❑ All asbestos waste (classes A to D) that has been treated and packaged as required in these regulations, must be deposited into trenches and immediately covered. Options include:

On a mono-disposal site, the waste must be deposited in a trench ash and immediately covered with, at least, a metre of ash.

On a co-disposal site, the waste must be immediately covered with domestic waste and carefully compacted. Otherwise it can be deposited in a deep trench, the waste must be completely covered with layer of ash, at least 25cm in depth. This will provide sufficient protection to the waste before a second layer is deposited on top. The trench should be closed, by adding a final layer of ash and/or general waste of at least 50cm in depth and compacting.

- ❑ During disposal, care must be taken to minimise the potential breaking of bags.
- ❑ *Only essential personnel* should be allowed to be close to the waste and should, as far as is possible, stand up wind, while the waste is being disposed. Personal protective equipment required in terms of the Occupational Health and Safety Act and the Asbestos Regulations must be worn at all times.
- ❑ No scavenging or other reclamation activities are allowed on or near the ACW disposal area within a waste disposal site, although the general

presence of scavengers does not automatically disqualify a site.

- ❑ On a co-disposal site, a surveyed area with the coordinates must be designated as the ACW disposal area. Other waste can be disposed in this area, but records must be maintained in order to prevent trenching or other operations taking place that could lead to the release of asbestos fibres.
- ❑ The ACW disposal area must be demarcated with hazard tape and signs erected to indicate that it is an asbestos area in terms of the asbestos regulations and that the appropriate protective clothing and equipment must be worn.
- ❑ No further trenching will be allowed on top of an area previously used for ACW unless it is covered with a layer of compacted waste that is at least 3 metres in depth.
- ❑ A monitoring programme for staff required by the Occupational Health and Safety Act should be implemented. This requires an initial analysis followed by regular monitoring at intervals of between 6 months and 2 years depending on the initial level.
- ❑ The procedures for disposal of ACW must be maintained at all times and must be specifically included in the internal auditing programme and annual external auditing programmes.

## 7. **Permit Requirements for Landfilling**

The Department requires any site that wishes to dispose of ACW to apply for an amendment to its permit. The requirements are those listed in these regulations but before formal application, it is recommended that the applicant discuss the requirements with the Regional office of the Department.

## 8. **References**

- [1] US EPA: Asbestos NESHAP Adequately Wet Guidance; EPA340/1-90-019, December 1990
- [2] Department of Water Affairs and Forestry, "Minimum Requirements for the Classification, Handling and Disposal of Hazardous Waste". 2<sup>nd</sup> edition, Pretoria, 1998
- [3] SABS, "Code of Practice for the Identification and Classification of Dangerous Substances and Goods, 0228 – 1990, Pretoria, 1990
- [4] Department of Water Affairs and Forestry, "Minimum Requirements for Waste Disposal by Landfill", 2<sup>nd</sup> edition, Pretoria, 1998

## **ANNEXURE TWO**

**DWAF POLICY RESOURCE ENTITLED  
PROCEDURE WITH REGARD TO THE  
ISSUING OF EXEMPTIONS UNDER SECTION  
20 OF THE ENVIRONMENT CONSERVATION  
ACT, 1989 (ACT 73 OF 1989)**

**PROCEDURE WITH REGARD TO THE ISSUING OF EXEMPTIONS  
UNDER SECTION 20 OF THE ENVIRONMENT CONSERVATION  
ACT, 1989 (ACT 73 OF 1989)**

**PURPOSE OF THIS PROCEDURE**

- To serve as a guideline document for applying for an exemption under section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989).
- To outline the procedure to be followed and the type of information to be submitted for consideration for the issuing of an exemption.

**BACKGROUND**

The Department of Water Affairs and Forestry (DWAF) is mandated to issue permits for disposal sites<sup>1</sup> in terms of section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989). According to section 20(1) "no person shall establish, provide or operate any disposal site without a permit issued by the Minister of Water Affairs and Forestry". Section 20(1) also states that the Minister may exempt any person or category of persons subject from such conditions, as he may deem fit. Based on this DWAF issues permits and exemptions once the principles of the Minimum Requirements 2<sup>nd</sup> edition have been complied with by the applicant, in accordance with section 20(3).

In some instances, it is considered appropriate to issue an exemption rather than a permit, specifically for activities related to the recycling and/or the treatment of waste, for example where an applicant wishes to recycle waste material into a commercial product such as the conversion of ash waste into bricks as well as the temporary storage of some types of waste material. The Department can, after careful evaluation, exempt an applicant from complying with some of the requirements for permitting. This implies that, provided all the necessary information required for granting of an exemption have been submitted, an exemption to undertake a particular activity will be granted in terms of section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989).

All waste management facilities must register, on the Department of Water Affairs and Forestry's WARMS System, in terms of the National Water Act, 1998 (Act 36 of 1998) and as required in the National Waste Management Strategy (NWMS) Action Plan for Waste Disposal.

**INFORMATION WHICH IS REQUIRED IN SUPPORT OF AN APPLICATION FOR AN EXEMPTION**

1. The application should clearly state the reasons for the application.
2. A clear description of the activity is required, which should include:
  - 2.1 Sources, descriptions and quantities of raw or waste materials used. Classification of the material should be done according to the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (second edition, 1998).

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<sup>1</sup> Disposal site means a site used for the accumulation of waste with the purpose of disposing or treatment of such waste (as defined in Section 1 of the Environment Conservation Act, 1989).

- 2.2 Description and quantities of waste stream **generated**, as well as it's classification according to the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (second edition, 1998).
  - 2.3 **Water** management plan, including quantity and quality.
  - 2.4 A site layout indicating specific details regarding construction of the storage or disposal site (designs).
  - 2.5 Specific information on the timeframe applicable to the establishment of the facility (in the case of new facilities) includes the life of the facility until closure and decommissioning.
3. The locality of the activity, which should include:
    - 3.1 Locality map.
    - 3.2 Approved zoning.
  4. Details regarding the operation of the activity, especially management of impacts likely to result from the activity e.g. stormwater management, waste, effluents, leachate etc.
  5. The human health, environmental and the risk implications associated with the storage or disposal of this material e.g. risk of odours, noise, dust and both surface and underground water etc.
  6. Mitigation measures to be implemented to mitigate these risks.
  7. Proposed monitoring.
  8. In the event of this being a recycling activity:
    - 8.1 The material used as well as the product must be classified according to the Minimum Requirements, and include a comparison of the classification of the product to another similar commercial material already in the market.
    - 8.2 Should the product made from the waste be used in the building industry proof of confirmation that the proposed material complies with SABS specifications for building materials is required.
  9. A Record of Decision or proof of an exemption of the EIA Regulations promulgated in terms of section 26 of the Environment Conservation Act, 1989 (Act 73 of 1989), from the Provincial Department of Environmental Affairs in accordance with Section 21 and 22 of this Act is required, as well as authorisation required in terms of other legislation.
  10. Detailed information on the decommissioning of the activity.

Please note that the **underground** storage of **hazardous material** has the potential to impact on the ground water environment. The Department does not recommend such storage unless it can be proved through proper motivation, that the operation will not adversely impact on the environment, especially on the groundwater environment. This motivation should *inter alia* include detailed designs of containment aspects, monitoring for effectiveness of the proposed system and contingency plan in the case of failure of containment.

It should however be stressed that the decision to issue an exemption solely lies with the Department and should it be decided that a permit will be issued, the applicant will be required to furnish the Department with all the necessary information to satisfy the requirements for a permit. Furthermore the Department may, during the process of evaluation of the application, require any additional information from the applicant that may be necessary to reach a decision.

## **RESPONSIBILITIES**

<b><i>TASK</i></b>	<b><i>RESPONSIBILITY</i></b>
1. Investigations on a proposed activity	Applicant
2. Classification	Applicant
3. Zoning	Applicant
4. Compliance with EIA Regulation	Applicant and the relevant provincial Department of Environmental Affairs
5. Register on WARMS	Applicant and the relevant Regional Office of Department of Water Affairs and Forestry
6. Submit application	Applicant
7. Evaluation of an application	Department of Water Affairs and Forestry
8. Issuing and amendment of an Exemption	Department of Water Affairs and Forestry Head Office

The Department does not approve the technology to be applied in a particular activity, but only issue exemptions for the use of such technologies. It is the responsibility of the applicant to ensure that the technology in question is approved by the relevant organ of State or Department or any other recognised body authorised to do so before the application for an exemption is submitted to the Department of Water Affairs and Forestry.

*Compiled by: J.C. Maluleke*

*Updated by: Wilna Moolman - 25 April 2002*

## **ANNEXURE THREE**

**DWAF POLICY ON THE DEFINITION OF DISPOSAL SITES WITH REGARD TO THE ISSUING OF PERMITS FOR WASTE INCINERATORS, WASTE MANAGEMENT FACILITIES AND OTHER ALTERNATIVE WASTE DISPOSAL TECHNOLOGIES AND RELATED GUIDELINES.**

## **INTERPRETATION OF THE DEFINITION OF DISPOSAL SITES WITH REGARD TO THE ISSUING OF PERMITS FOR WASTE INCINERATORS, WASTE MANAGEMENT FACILITIES AND OTHER ALTERNATIVE WASTE DISPOSAL TECHNOLOGIES AND RELATED GUIDELINES**

### **1. BACKGROUND**

As landfills across South Africa continue to fill, acceptable sites for new landfills become more difficult to find, especially in populated areas. This problem is forcing waste managers to become more resourceful in their search for space and to limit the amount of landfills through regionalisation and also to follow the cleaner technology route by establishing facilities such as waste recycling plants, treatment plants, transfer stations, storage areas and vacuum pyrolysis plants.

Vacuum pyrolysis plants, incinerators, compost plants, transfer stations, storage facilities and recycling plants are all seen as waste disposal sites according to the definition of a disposal site in terms of section 1 of the Environment Conservation Act, 1989 (Act 73 of 1989)(ECA). "Disposal site" means a site used for the accumulation of waste with the purpose of disposing or treatment of such waste. The facilities mentioned are seen as disposal sites because of the "continuous" storage of waste on the premises of these plants or sites before the disposal, removal or handling thereof.

### **2. LEGAL REQUIREMENTS**

According to section 20(1) of the ECA "no person shall establish, provide or operate any disposal site without a permit issued by the Minister of Water Affairs ..." and for this reason the above-mentioned facilities should obtain a disposal site permit before they are established or operated.

Section 20(6) of the Environment Conservation Act, 1989 (Act 73 of 1989) determines that no person shall discard waste or dispose of it in any other manner, except -

- (a) at a disposal site for which a permit has been issued; or
- (b) in a manner or by means of a facility or method and subject to such conditions as the Minister may prescribe.

In terms of the said Act, "prescribe" means "prescribe" by regulation and no such regulations have been issued by the Minister of Environment Affairs in this regard. This means that waste has to be disposed of at a disposal site which is defined as a site used for the accumulation of waste with the purpose of disposing or treatment of such waste. The land on which an incinerator/transfer station/waste recycling plant/treatment facility/waste storage area is established/installed, can thus be regarded as a disposal site for which a permit should be issued in terms of the mentioned act.

There are a few other legal requirements which must be complied with in order to permit

and operate a waste disposal site including the above-mentioned facilities eg. the EIA Regulations and the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965).

### EIA Regulations

The requirements include compliance to the Environmental Impact Assessment (EIA) Regulations published in April 1998 (promulgated in Government Gazette No. 18261, 5 September 1997).

These regulations entail that a scoping exercise be undertaken which must include public participation. Alternative sites must be considered and the best site be identified. The Scoping exercise lead to the submission of a preliminary Environmental Impact Assessment Report to the Department of Environment in the different Provinces (Provincial Government). These Departments will then give guidance regarding the need for a full EIA as part of the permitting process of these facilities. To issue a permit, this Department thus requires a Record of Decision (RoD) or a letter confirming that an exception from an EIA has been given, from the provincial Department of Environment.

### Atmospheric Pollution Prevention Act, 1965

In the case of incinerators air emissions are one of the issues which must be controlled. Most incinerators in South Africa are currently regulated by local authorities in terms of the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965) and the Health Act, 1977 (Act 63 of 1977). The operation of the site and the emissions from the incinerator should be regularly inspected by air pollution staff of these authorities. Conditions are also prescribed for the collection, transportation and storage prior to incineration in terms of the Health Act, 1977 (Act 63 of 1977).

Incineration of waste (including medical and hazardous waste) is listed as a scheduled process in terms of the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965). Scheduled processes are controlled by the Chief Air Pollution Control Officer of the Department of Environmental Affairs and Tourism (DEAT). The listing as a scheduled process will enable the Chief Officer to issue a registration certificate for a specific incinerator on certain conditions. In terms of section 12 of the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965) the registration certificate shall be subject to the condition that all plant apparatus used for the purpose of carrying out the scheduled process in question and all appliances for preventing or reducing to a minimum the escape into the atmosphere of noxious or offensive gases, shall at all times be properly maintained and operated and the holder of the certificate shall ensure that all the necessary measures are taken to prevent the escape into the atmosphere of noxious or offensive gases. The Act also states that due allowance should be made for the unavoidable escape into the atmosphere of noxious or offensive gases during the starting-up of any plant or apparatus in respect of which the registration certificate has been issued or during the period of any breakdown or shut-down or disturbance of such apparatus or plant. The Chief Officer may by written notice require from the holder of such certificate that steps to ensure more effective operation of the appliances be taken. If the permit holder fails to comply with these conditions or requirements within a reasonable time, the Chief Officer may cancel the permit.

The following information is specified in the certificate, in terms of section 11(2) of the

mentioned Act:

- (a) the situation and extent of the proposed building or plant to which the certificate relates;
- (b) the nature of the scheduled process intended to be carried out;
- (c) the raw materials intended to be used, the nature of the operations intended to be carried out and the products intended to be produced;
- (d) the appliances intended to be installed and any other measures intended to be taken with a view to preventing or reducing to a minimum the escape into the atmosphere of any noxious or offensive gases likely to be produced by the operations intended to be carried out; and
- (e) the proposed measures for the purification of the effluents discharged from the appliances installed for preventing or reducing to a minimum the escape into the atmosphere of any noxious or offensive gases for the processes that will be in operation, and for the prevention of the release of noxious or offensive constituents from such effluents when they come into contact with other effluents in drains or drainage canals.

It is clear that the certificate mainly addresses the pollution of air by the incinerator, although the pollution by effluents generated at the plant is also regulated. The incineration of waste can however have an impact on every aspect of the environment - air, soil, surface and ground water, thereby possibly endangering environmental health. It can just be mentioned that medical waste and the residue after the incineration process is regarded as hazardous waste in terms of the Basel Convention.

### 3. PROCESS

The same process as outlined in Figure 1 (page 1-9) of the document "Minimum Requirements for Waste Disposal by Landfill, second edition, 1998" should be applied with the development and permitting of these facilities.

Sites must first be classified according to the type and volume (volume = maximum amount of waste handled/treated/stored per day for which the facility was designed) of waste handled/treated/stored at the specific facility per day. After different locations for the proposed facility have been identified and ranked, a feasibility study on the best alternative site should be conducted. After the confirmation of feasibility has been obtained from the Department of Water Affairs and Forestry (DWAF), the applicant applies for a permit. The required documents (according to the Minimum Requirements for Permitting - see Table 5 of the document "Minimum Requirements for Waste Disposal by Landfill") for that specific class site must then be submitted together with the permit application form. Since the Minimum Requirements are written specifically for waste disposal by landfill the level of detail required for each report/investigation could certainly vary for these waste facilities. In the case of general disposal sites the requirements must be discussed and confirmed with the specific Regional Director of DWAF, but a Design Report, Operation Report, Monitoring

Report and Contingency Plans would always be required. In some instances, additional studies (eg. Geohydrological Report) could be necessary.

#### **4. GUIDELINES TO COMPILE A PERMIT APPLICATION REPORT FOR THE ABOVEMENTIONED WASTE MANAGEMENT FACILITIES**

The Permit Application Report should include the information as required above. Guidelines on the type of information which should be given in this report for DWAF to make a decision whether to grant a permit or not is as follows:

##### Background information

This section must summarise the following aspects:

- A. waste classification and quantities
- B. current waste management system
- C. climatic conditions
- D. description of the proposed facility and environmental overview of conditions at the site

##### A. Waste classification and quantities

The types of waste generated and to be disposed of/treated/stored at the facility should be addressed e.g. whether it is household refuse for the site to be classified as a G site or whether it is hazardous waste for the site to be classified as a H site and the maximum quantities of waste stored/treated/disposed/handled at the facility per day.

This will indicate the classification of the site.

##### B. Current waste management system

This section should address the operational area and the population statistics of the area. It should also address waste collection, transport and existing methods of waste disposal/handling/treatment/storage.

##### C. Climatic conditions

Climatic conditions of the area, rainfall conditions (mean annual precipitation and evaporation rates), prevailing wind directions should be addressed in this section.

It could be that these waste management facilities in terms of the Landfill Classification System indicate that the region is in a water surplus area. A landfill in such an area would be expected to produce leachate and would be designated "B<sup>+</sup>". However, due to the enclosed designs of most of these facilities climatic factors are expected to have little influence on the waste deposited/treated at the facility. Any leachate that may be generated would be the result of the moisture content of the incoming waste. These facilities will thus be classified as "B" sites in most cases.

#### D. Description of the proposed waste management facility and environmental overview

A description of the site location which includes a topocadastral map (1:50 000) indicating the location of the following, where present, within a 5 km radius of the site boundary:

- \* the waste management facility
- \* the area served
- \* existing residential and industrial areas
- \* possible future development
- \* transport route
- \* other waste management facilities in the area
- \* zoning and land use of the waste management facility and surrounding area within a 5 km radius, and
- \* the 1:50 year floodline of all watercourses.

As mentioned earlier in the document a preliminary environmental overview should be undertaken during the Scoping process which *inter alia* addresses the surrounding land uses, the geohydrology in the vicinity of the site, the ecology and conservation worthiness. The land use upon which these waste management facilities are to be developed should be approved and correctly zoned in terms of local and provincial legislation. Most probably no detailed geohydrological investigation/report will be required as part of the permit application for the above-mentioned waste management facilities.

Detailed reports of the following will be required and should be attached to the permit application:

- \* Design report,
- \* Operation and Monitoring report
- \* Contingency plans
- \* Environmental Impact Control Report (only if an EIA is required - consult with DWAF departmental officer and Department of Environment, Provincial Government).

#### Design report

This report should address:

- \* infrastructure requirements,
- \* stormwater and leachate management requirements, and
- \* odour control.

#### Operation Plan

An overview of the proposed operation of the waste management facility should be given. The following aspects should be addressed:

- \* Equipment description and Maintenance
- \* Staffing requirements
- \* Screening and acceptance of waste
- \* Waste handling, loading, compaction operation

- \* Waste Auditing and Reporting Procedures
- \* Traffic Control
- \* Environmental Control

Transportation and final disposal operations should be included in the above plan.

In addition to the above, the Operation Plan should also address the following aspects:

- \* Safety and Emergency Response
- \* Fire Prevention

A description of the facility e.g. existing infrastructure, ablution facilities, a dedicated telephone etc. should also be addressed.

The Operation Plan should also address access control to the site.

The general management of these waste management facilities will ensure the control of nuisances. Special measures to ensure good management must be addressed in the Operation Plan.

Such measures may include:

- \* No unauthorised discharging of waste at the facility
- \* No waste picking
- \* Roadways and other surfaces must be cleaned immediately after discharge where necessary etc.

#### Monitoring Plan

A Monitoring plan should be drawn up and implemented to ensure that the site conforms to permit requirements. Critical aspects to be monitored are:

- \* Types of incoming waste
- \* Excessive leachate production, and
- \* Cleanliness and odours

In addition the equipment must be monitored during use to ensure it is in good running order.

#### Environmental Impact Control Report

Should an EIA be required and/or if potential environmental impacts be identified during the Environmental Scoping process an Environmental Impact Control Report should be compiled which must address these impacts. In many cases, the impacts identified at these facilities are ground and surface water pollution, odour and visual impacts. These impacts must be addressed in the design and management of the site.

#### Environmental Consequences of failure assessment and report

Pollutants can escape into the surrounding environment via surface water, groundwater and/or air/wind flow. Measures to prevent floodwater from entering the facility should be

addressed. Storage areas should be built above minimum allowable floor level. In the case of groundwater pollution, measures should be in place to prevent leachate and contaminated stormwater from entering the surrounding environment. Drainage systems should be described in detail. If leachate and contaminated stormwater is pumped to municipal sewers, the approval letter from the municipality should be submitted together with the permit application.

Good management of waste management facilities does not require odour control. The situation should however be monitored and if problems arise due to odours the permit holder should respond immediately in an appropriate manner. Methods are aerosol deodorisers, biological filtration and chemical scrubbing.

A Response Action Plan should also be submitted if stoppage in the operation of the specific waste management facility will have an environmental impact.

## 5. CONCLUSION

This document only gives broad guidelines with regard to the permit application process applying to disposal facilities. *Ad hoc* exceptions to these broad guidelines may apply. Of importance is that the legal principles mentioned here and the objectives of the Minimum Requirements must however always apply.

It is important to note that the Department does not approve technologies, but issue permits for the use of such technologies in which performance criteria are set. Incinerators must for example be licensed by the Department of Environmental Affairs and Tourism first before a permit for such a "disposal site" will be considered by the Department.

Permits which will be issued for these facilities could be an abbreviated or amended version of the standard disposal site permit and conditions which are applicable to the specific facility will be included.