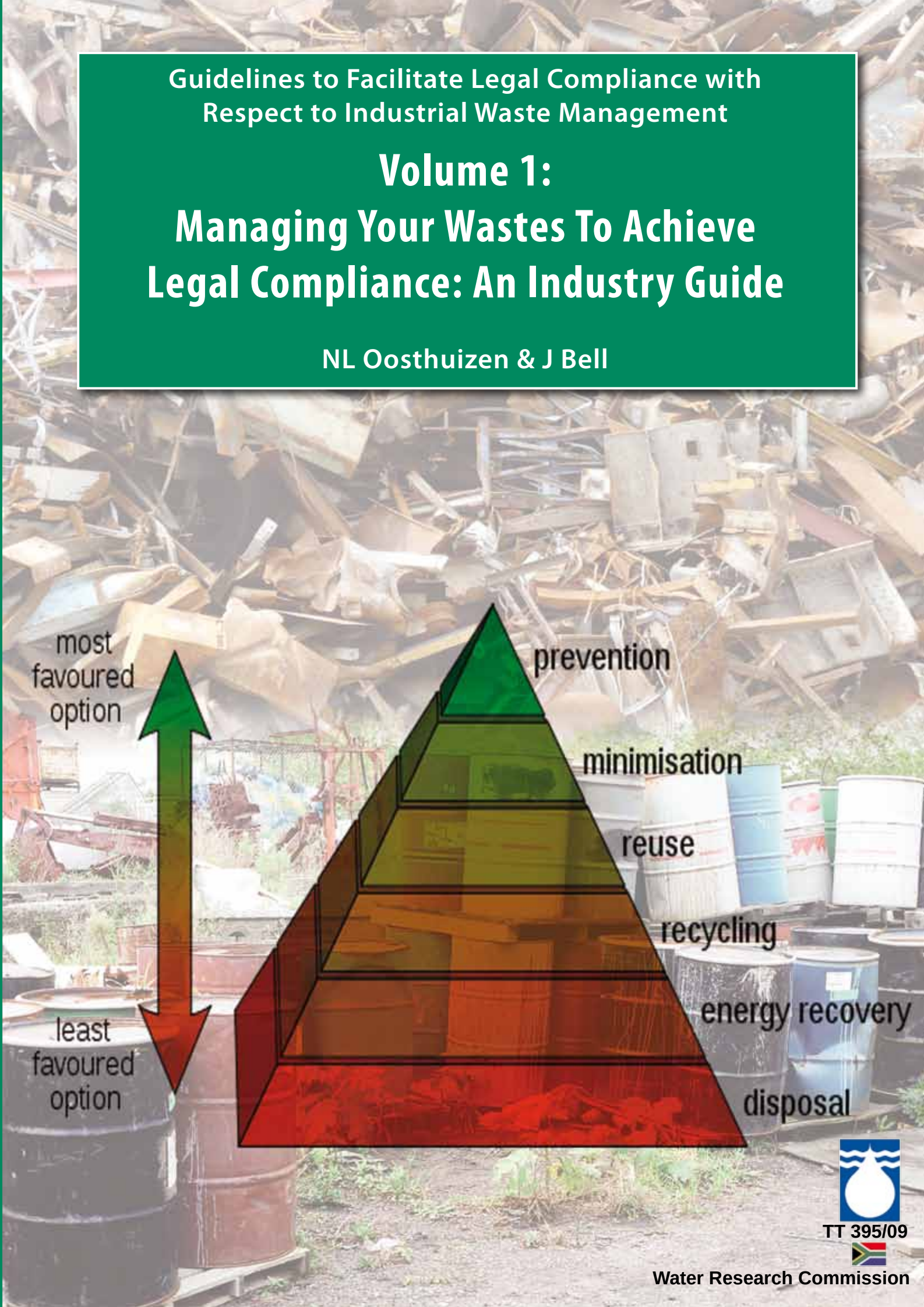
Guidelines to Facilitate Legal Compliance with Respect to Industrial Waste Management

Volume 1: Managing Your Wastes To Achieve Legal Compliance: An Industry Guide

NL Oosthuizen & J Bell



TT 395/09
Water Research Commission

GUIDELINES TO FACILITATE LEGAL COMPLIANCE WITH RESPECT TO INDUSTRIAL WASTE MANAGEMENT

VOLUME 1:

MANAGING YOUR WASTES TO ACHIEVE LEGAL COMPLIANCE: AN INDUSTRY GUIDE

Report to the
Water Research Commission

by

NL Oosthuizen & J Bell
on behalf of
Nancy Oosthuizen Consulting CC &
Judy Bell CC

WRC Report No. TT 395/09

July 2009

Obtainable from

Water Research Commission
Private Bag X03
Gezina, 0031

orders@wrc.org.za

The publication of this report emanates from a project entitled *Development of Guidelines to Facilitate Legal Compliance with Respect to Industrial Waste Management.*
(WRC Project No. K5/1733)

ISBN 978-1-77005- 842-2
Set No. 978-1-77005-841-5

Printed in the Republic of South Africa

VOLUMES

GUIDELINES TO FACILITATE LEGAL COMPLIANCE WITH RESPECT TO INDUSTRIAL WASTE MANAGEMENT

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.

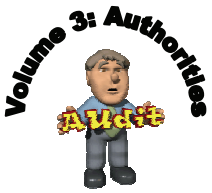
Separate Guideline Volumes deal with Waste Generators, Intermediate Waste Contractors and Authorities tasked with evaluating an organisation's compliance status. Some aspects of the guides are repeated such as the legal framework, but the content is amended to highlight the requirements specific to the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

ACKNOWLEDGEMENTS

The financing of the project by the Water Research Commission, the contribution of the members of Reference Group, and those persons attending the waste contractors' workshop is gratefully acknowledged.

The Reference Group responsible for this project consisted of the following persons:

Dr Heidi Snyman (Chairman)	Water Research Commission
Ms Sue Beningfield	Institute of Waste Management Southern Africa
Mr Ian Naidoo	Durban Chamber of Industry – Environment Committee
Ms Shane Naidoo	Department of Water Affairs and Forestry
Mr Pat Reddy	Department of Water Affairs and Forestry
Mr Sgananda Jikijela	Department of Environmental Affairs and Tourism
Marvellous Nengovhela	Department of Environmental Affairs and Tourism
Mr. Sunil Ramkissoon	eThekwini Water and Sanitation
Ms Shauna Costley	Department of Agriculture and Environmental Affairs
Mr Bruce Dale	eThekwini Health
Mr John Parkin	Durban Solid Waste
Mrs Sandra Redelinghuys	Engen Refinery

The Project team consisted of the following persons:

Mrs Nancy Oosthuizen (Project Leader)	Nancy Oosthuizen Consulting CC
Ms Judy Bell	Judy Bell CC

TOC

TABLE OF CONTENTS

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

ANNEXURE THREE: 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

CHAPTER ONE: INTRODUCTION

1.1 PURPOSE OF THE GUIDE

This guide has been developed to assist you as a manager in industry to manage your wastes better by:

- complying with legal requirements;
- generating less waste;
- safely handling, transporting and storing your wastes;
- effectively managing your waste contractors;
- disposing of your wastes to the correct landfill site;

thereby minimising the impact of your wastes on the environment and your business.

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.

1.2 FOR WHOM IS THE GUIDE INTENDED?

This guide is for the industrial waste generator and is intended for use by members of the management team who are responsible for environmental, health and safety matters within their company and who have the ability to influence the company's waste management practises. Management of wastes starts with you, the waste generator and therefore it is your responsibility to ensure that the steps taken at the beginning of the waste journey ultimately lead to the conservation of resources, protection of the environment and the health and safety of the citizens of our country.

The guide will also be useful for the commercial waste generator that produces small quantities of hazardous wastes, for example fluorescent tubes. It may also be used as a valuable tool by government officials who deal with waste issues.

1.3 CASE STUDY: THE ETHEKWINI MUNICIPALITY

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

If your company is based in other areas, please make sure you find out what provincial requirements and local by-laws apply. This can be done by looking on the web sites of your local provincial environment department and your local authority. If the information is not readily available you may need to visit the offices of your local authority, commission a consultant to assist you, or subscribe to a service that provides you with updated legislation.

THIS GUIDE CAN BE USED TO:

- ☑ Reference legal requirements.
- ☑ Review preferred waste management practices and enhance your company's compliance status.
- ☑ Assess your current waste management practices against those detailed in the guide and identify opportunities for improvement.
- ☑ Assist in the development of terms of reference that can be used to select a waste contractor that best suits your needs, whilst at the same time limiting your potential liabilities.
- ☑ As a training tool.

CHAPTER TWO: LEGAL FRAMEWORK

SUMMARY

Legal Reference	Abbreviation	Issues
National Environmental Management Act	NEMA	Pollution prevention, environmental management principles, incident management, environmental authorisations
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 groups
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 fenceline
Hazardous Chemical Substance Regulations	HCS Regs	Storage, handling, transport and disposal of HCS, asbestos, lead and HBAs, including training requirements
Asbestos Regulations	Asbestos Regs	
Lead Regulations	Lead Regs	
Hazardous Biological Agents Regulations	HBA Regs	
Health Act and National Health Act	-	Prevention of nuisance conditions
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:WMA	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

2.1 *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.

2.2 *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 27th 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.

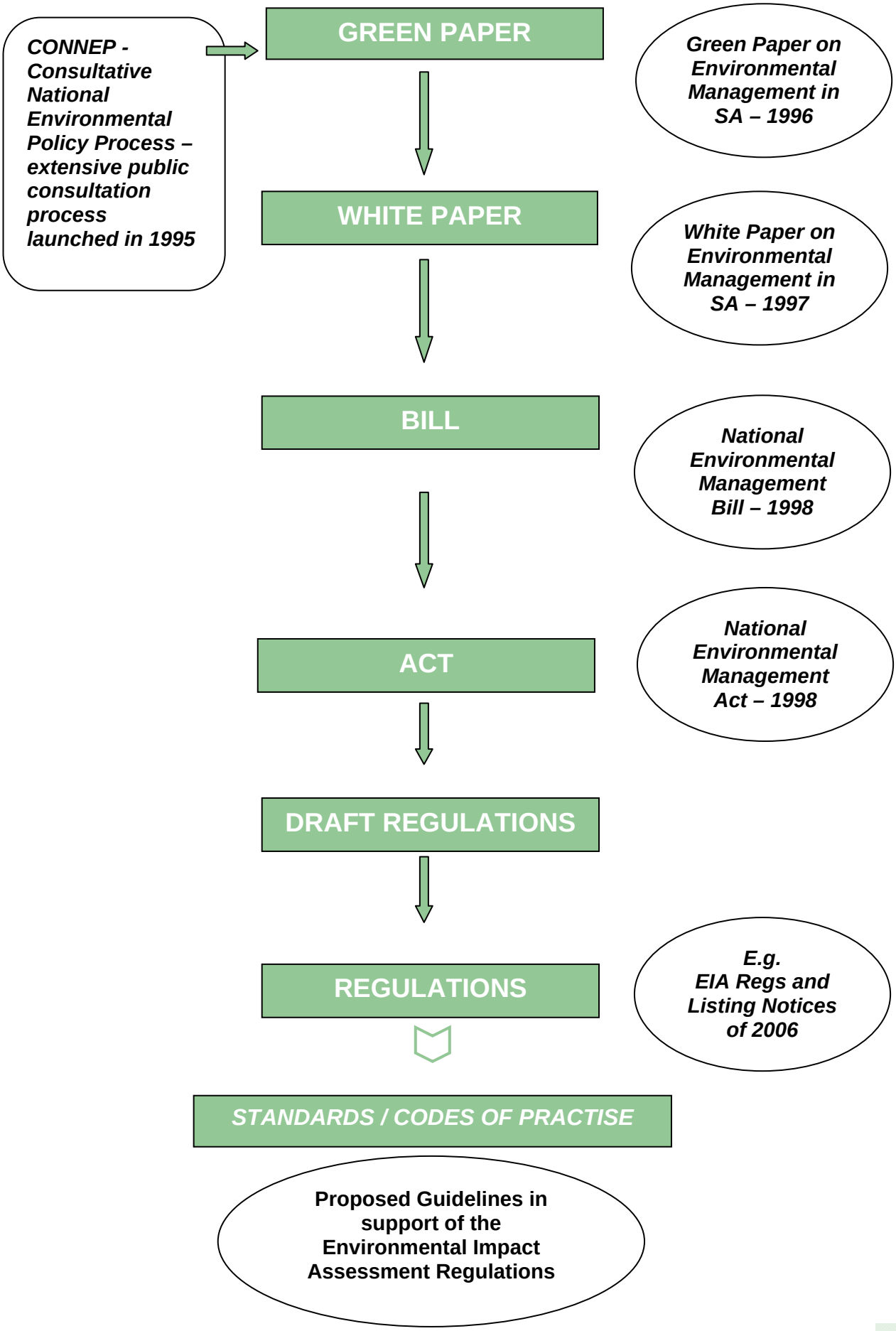
It is also important to note that sometimes only ***certain sections*** of a particular act come into effect, whilst other sections follow at a later stage. This is to allow for administrative actions to be undertaken by the relevant Department(s) before these sections may be implemented.

For example:
The National Environmental Management Air Quality Act 39 of 2004 was gazetted on 24th February 2005 but did not commence on this date.

The commencement date of 11th September 2005 was proclaimed in GNR 898, GG 28016 published on 9th 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.



2.3 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)
- Provincial environment 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 -*
a) is ***discarded*** *by any person; or*
b) is ***accumulated & stored*** *by any person with the* ***purpose of eventually discarding*** *it with or without prior treatment connected with the discarding thereof;*
c) building rubble used for filling or levelling purposes;
d) is ***stored*** *by any person with the* ***purpose of recycling, re-using or extracting a usable product*** *from such matter, excluding …"*

2.3.1 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 ecologically sustainable development.

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

2.3.2 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. As a manger in industry, 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

2.3.3 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

2.3.4 THE POLOKWANE DECLARATION OF 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. ***As a company you should thus be actively pursuing waste prevention and minimisation programmes***.

2.3.5 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 you should ensure that your wastes are adequately contained within your 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 your wastes are taken to permitted facilities – this includes recycling and treatment facilities. You should also obtain copies of all permits relating to the landfill site, recycling and / or treatment facility where your wastes are taken. These permits include a wide range of legally binding conditions. You should review these conditions to ensure that the facility is allowed to accept your particular type of waste. It is also best practise to 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.

CAUTION!

A significant proportion of industrial waste is hazardous and must go to a HH or Hh landfill site unless is has been delisted to an appropriate general waste site (See Chapter 8 on Waste Classification for further details).

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

2.3.6 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 and will be elaborated on in later Chapters. Environmental Authorisations are required for various waste related activities. These are discussed further in Chapter 7, Section 7.1.5.

Perhaps the most important section of NEMA with respect to waste management in industry is ***Section 28*** which prescribes certain actions in terms of the *"Duty of Care and Remediation of Environmental Damage".*

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 ……..

where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people……"

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.

Waste management reasonable measures (S28(3)) could include:

"Investigate, assess and evaluate the impact on the environment" – S28(3)(a)

- For example you should identify your 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 you should develop and implement appropriate waste management procedures and work instructions. You also need to train your 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 you discharge a waste effluent to the sewer that does not comply with the local authority requirements, you 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 you should ensure that your 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 your premises, you 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)

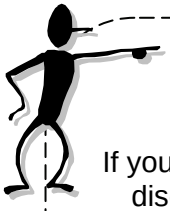
- For example, if you stockpile waste on the ground and the soil (and possibly the groundwater too) is contaminated, you need to clean-up and remediate!

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 you are the landlord of a property on which an activity causes pollution, **you could be responsible for paying for the clean-up even if you were not directly involved in causing the pollution!**



CAUTION!

If you ask one of your 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***). You 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 you need to take should you have an emergency incident on or even off-site (such as when your waste company is transporting your 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 you and your company can potentially be held liable for an incident that happened as a result of work that was being carried out by a waste contractor on your 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. You need to be aware that these officials can visit your company at any time to review your 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 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

2.3.7 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. You must be aware of this section if you store waste in a manner that may impact on a water resource following an incident. It is also relevant if you employ waste companies to remove hazardous waste from your premises, as

their 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 f**or 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

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"

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.

You will however need a permit to discharge your waste effluent from the responsible authority 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.

If you do 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.

Water use licenses or registrations may be required if your company is engaged in a water use activity (refer poster). Your 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).

2.3.8 *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!

Do not forget about your contractors, when you are dealing with health and safety issues. It is important to remember in terms of S37 of the OHSA you can be held liable for an offence that your contractor has committed. You should ensure that Health, Safety and Environmental Agreements are concluded with your contractors and that you audit their performance from time to time.

Ensure you receive a letter of good standing from the Compensation Commissioner for each contractor. You 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 your 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.

2.3.9 *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 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 under the HCS Regs. These training initiatives can assist you to improve upon your waste management practises. See the following page for some examples.

Some of the HCS Regs Training requirements and how they can benefit your waste management program

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

- Training your employees in good housekeeping is one of the ways in which to minimise the generation of excess 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 your 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.

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 your 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 you use. The HCS may form part of your hazardous waste streams and therefore the MSDSs are important documents that may be used for the classification of your 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, labelled, transported and stored. This is dealt with in more detail in Chapter 8.

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 you to include a clause in the contract that you sign with your waste service provider that they will comply with the requirements of the Regs when dealing with your wastes. You should therefore make a note of these requirements in your tender documents.

2.3.10 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 you generate asbestos waste in your operations it is important to ensure that you 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 you have a clause in the contract that you have signed with your waste provider that they will comply with the requirements of the Asbestos Regs. You should therefore make a note of these requirements in your tender documents.

2.3.11 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 you generate lead waste in your operations it is important that you ensure that you 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 you to have a clause in the contract that you sign with your waste provider that they will comply with the requirements of the Regs. You should therefore make a note of these requirements in your tender documents.

2.3.12 HAZARDOUS BIOLOGICAL AGENTS OF 2001

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

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.

Specific attention is drawn to:

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

If you generate HBA waste in your operations it is important that you 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 you to have a clause in the contract that you sign with your waste provider that they will comply with the requirements of the Regs. You should therefore make a note of these requirements in your tender documents.

2.3.13 *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 you to check if your company requires a permit (See Sections 2.3.19 and 2.3.20 for further details).

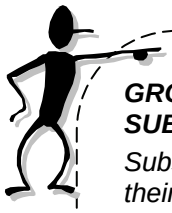
Most of the provisions of the Health Act have been repealed since the promulgation of the National Health Act. The latter Act provides for municipal health services which include:

- 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.

2.3.14 *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"

If you or your suppliers (including your waste contractors) use a Group I substance (pesticides for example) in your operations you need to refer to the Regulations regarding Group I Hazardous Substances (GNR 453 of 25 March 1977) as there are disposal requirements specified for empty containers.

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)

2.3.15 NATIONAL ROAD TRAFFIC ACT 93 OF 1996 (NRTA)

If your company generates hazardous waste, then you must ensure that you 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 you comply with the requirements of the Act and the Regulations. The dispatch of hazardous waste off-site therefore falls under these requirements.

Various SANS documents have been made legally binding in terms of the National Road Traffic Regulations and therefore it is important that you obtain copies of these documents so that you are aware of all the legal requirements which you and your waste company must comply with when dispatching and transporting hazardous waste off-site.

This subject will be covered in greater detail in Chapter 8.

2.3.16 THE MINIMUM REQUIREMENTS SERIES OF DOCUMENTS

The Department of Water Affairs and Forestry 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.

As a waste generator you need to be aware of these legal requirements. You need to ensure that when you 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 you 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 (Accessed Feb 09).

Chapter 6 will include more detail on the *Minimum Requirements Documents*.

2.3.17 *PROVINCIAL LEGISLATION – KWAZULU-NATAL*

You should check with your 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 28th August 2003. DAEA is also in the process of developing the KwaZulu-Natal Prevention and Management of Waste Bill and associated regulations.

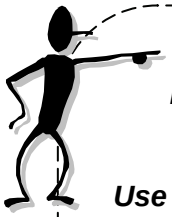
2.3.18 *THE ETHEKWINI REFUSE REMOVAL BYLAWS MN 47 OF 2002*

It is important that you consult the local bylaws for your area as they contain a number of requirements with which you 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.

As an industrial waste generator you need to be aware that bylaws require you to store your waste in suitable containers which are kept maintained. You may not allow your 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 also a number of administrative actions that you need to take to comply with these bylaws.



ACTIONS TO TAKE WITH RESPECT TO THE REFUSE REMOVAL BYLAWS:

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

Recycling Activities
If you are recycling wastes in terms of Section 4(a)(i) you 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 you send any food wastes for animal consumption.

Special Industrial Refuse (Liquids and sludges)
If you 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.

2.3.19 THE ETHEKWINI SEWAGE DISPOSAL BYLAWS MN 27 OF 1999

Although the focus of this guideline is not on effluent, your attention is drawn to the fact that you need a permit to discharge effluent other than normal domestic wastewater in terms of the eThekwini 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 you are conducting any activities at your premises that require the discharge of trade effluent to sewer, you will need to ensure that you have a valid permit for this effluent discharge. If you need to discharge effluent by road haulage to the eThekwini Municipality Southern Works facility (sea outfall) both you as the generator and your appointed waste haulier must have the written permission from eThekwini Water and Sanitation to undertake this activity.

2.3.20 THE ETHEKWINI SCHEDULE TRADE AND OCCUPATIONS BYLAWS MN 134 OF 1979

The Schedule 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.

TIP! When you receive your permits, do not just punch them and keep them on file. Most of your permits come with compliance conditions. Make sure that you incorporate these into your environmental management programmes on site.

2.3.21 THE NEW ETHEKWINI PERMITTING SYSTEM

The eThekwini 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 your company to establish an Environmental Management System (EMS) such as the ISO 14 001 EMS. Five-year Environmental Improvement Programs will also be required and in order to retain your permit, you 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 you will be expected to comply in order to retain your 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.

2.3.22 THE INTERIM CODE RELATING TO FIRE PREVENTION AND FLAMMABLE LIQUIDS AND SUBSTANCES PN 5417 OF 2000

If you store hazardous wastes which are flammable, then you 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 eThekwini's Interim Code Relating to the Fire Prevention and Flammable Liquids and Substances (PN 5417 of March 2000).

Additional information on these Certificates is provided in Sections 7.14.2, 8.10.2 and 9.3.2.

2.3.23 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 17th March 2000). The Draft National Environmental Management: Waste Management Bill was published for public comment on GN 1832, GG 29487 of 12th 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. 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^3 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 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 100kg 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 to improve reduction, re-use, recycling and recovery rates or reduce health and environmental impacts.

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
- 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.

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

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 take note of these requirements and that you incorporate them into your company 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

IMPORTANT LEGAL REQUIREMENTS – INCIDENT REPORTING SUMMARY

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 eThekwini 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 THREE: THE WASTE GENERATORS RESPONSIBILITIES

SUMMARY

Duty of Care	▫ Take reasonable measures to prevent pollution. This includes providing facilities, developing procedures, conducting risk assessments, and employee training.
Cradle to Grave	▫ Your responsibilities for waste do not end when the waste leaves your premises. Maintain an auditable paper trail of all the steps that are followed from point of generation to final disposal to prove that you and your waste contractors have complied with the law. ▫ Don't forget to include contractors working on your premises.
Polluter Pays	▫ If you cause the pollution you pay for the impacts. The cost could include those for clean-up and remediation, and can also include fines and possible criminal convictions. ▫ In certain circumstances you could be liable for pollution caused on the part of your waste contractor!
Precautionary Principle	▫ Waste must be treated as hazardous until proven otherwise. ▫ Your waste must be classified by the most hazardous constituent.
Waste Hierarchy	▫ The application of a process whereby you: ✓ Avoid waste ✓ Reduce, recycle or reuse waste ✓ Treat waste ✓ Only dispose of waste to the environment as a last resort

3.1 GENERAL

As a waste generator you should be aware of the fundamental waste management principles that need to be incorporated into your waste management programs.

3.2 THE DUTY OF CARE REQUIREMENT

As explained in Chapter 2, in terms of the National Environmental Management Act (NEMA) and the National Water Act (NWA) requirements you need to take reasonable measures to prevent pollution from occurring, continuing or reoccurring. This means that you should ensure that the waste management system you implement on-site (including those of your contactors) is effective in achieving this objective.

This can include:

- Written policies, procedures and work instructions that ensure compliance with legal requirements
- Employee and contractor training
- Regular inspections, self-audits and contractor audits
- Developing and testing contingency plans to deal with environmental incidents especially those requiring emergency response
- Maintenance of comprehensive records

3.3 CRADLE-TO-GRAVE MANAGEMENT

It is important to be aware that your responsibilities as a waste generator do not end when your waste leaves the premises with your appointed waste contractors (treatment, recycling and 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.

The cradle-to-grave management of wastes means that you should manage your wastes throughout the entire life-cycle, from the point of generation to the final disposal. This means that you should follow the fate of your wastes after they have left your premises and are in the hands of your contractors. It is your responsibility to check that your suppliers are also complying with the relevant legal requirements.

3.4 THE POLLUTER PAYS PRINCIPLE

As a waste generator you can face a host of liabilities if your waste management practises cause pollution. In certain circumstances, you can even be held accountable for pollution that your waste contractor caused!

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.

These liabilities can include clean-up and remediation costs, fines, ***even jail terms and a criminal conviction.***

The responsibility for handling, treating and disposing of wastes can pass from one party to another, but as a generator you will always be one of the parties held accountable for the pollution caused by the waste. You must therefore ensure that when you transfer the control of your wastes to another party, it is done responsibly and you are able to prove this. This is achieved by ensuring that:

- Your wastes have been classified;
- The waste facility can legally accept the waste stream;
- The contractor is approved by the local authority (if applicable in your area);
- The transportation of hazardous wastes is done accordance with the requirements of the National Road Traffic Act (NRTA).

- The waste is landfilled / treated / recycled at the disposal facility that the contractor has stated that they are going to use;
- Any treatment that the contractor has said will be carried out is completed as required;
- The waste facility has a valid permit;
- You audit your contractor to verify their environmental performance and legal compliance status.

It is important that you enter into contractual agreements with your waste service suppliers. This contract should detail the individual roles and responsibilities of each party.

3.5 THE PRECAUTIONARY PRINCIPLE

The precautionary principle dictates that you must classify your wastes as hazardous until proven otherwise. It is therefore in your interest to ensure that you classify your wastes correctly as the more hazardous the waste is, the more costly the disposal will be.

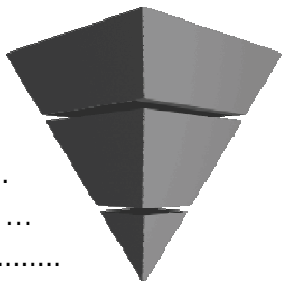
NEMA PRINCIPLE

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.

3.6 THE WASTE HIERARCHY

The waste hierarchy is depicted in the diagram below with the most favourable waste management option being to avoid the production of waste, and working through the other options to disposal, being the least favoured option to be considered as a 'last resort'.

Avoid……
Reduce……
Reuse……
Recycle……
Treat……
Dispose responsibly…..



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.

The application of the waste hierarchy is an essential part of your waste management program. This means that you should be reviewing methods of waste prevention and minimisation, resource recovery opportunities, and waste treatment technologies in your management strategy.

You will reap the rewards of this approach as not only will you be saving money on disposal costs, but you will be earning money on recyclable wastes and also limiting your company's potential liabilities.

YOUR WASTE RESPONSIBILITIES!

- Minimise the impact of your waste on health and safety and the environment by classifying, handling, storing, transporting and disposing/recycling correctly;
- Ensure compliance with applicable legal requirements;
- Apply the waste hierarchy;
- Ensure compliance of the contractors working on your site;
- Ensure compliance of your waste/recycling service provider in fulfilment of your Duty of Care responsibilities.
- Maintain Cradle-to-Grave paperwork

CHAPTER FOUR: IDENTIFYING YOUR WASTE STREAMS

SUMMARY

Make a list	▫ Find what wastes are generated, where they go, who is removing them, how often and also how much does it cost.
Develop an inventory	▫ Create a spreadsheet to record and track your wastes.
Assess the waste streams	▫ Find out how many waste streams you have and try to separate as many as possible at source.
The 80/20 principle	▫ Start with those wastes with the highest hazard rating, largest volume and/or highest management costs. ▫ Get some quick wins to inspire and encourage all employees and contractors to share the vision.
Identify the hazardous wastes	▫ These are wastes that may be: ✓ Ignitable – flammable substances ✓ Corrosive - either alkaline or acidic ✓ Reactive - unstable ✓ Toxic / Infectious – potential to cause disease and even death / harm to the environment
Health and Safety Issues	▫ Do not forget about the health and safety issues when dealing with hazardous waste. Remember, hazardous wastes may expose your employees and your contractors by way of: ✓ Skin contact ✓ Inhalation ✓ Ingestion ✓ Eye contact
E-Wastes	▫ Do not forget to look at ways of managing those used, broken or old electronic devices such as old computers and screens.

4.1 WHERE TO START?

4.1.1 GATHER BASELINE DATA

Get a list of the wastes that are already leaving your site by looking for the paper trail (invoices, delivery notes / waste manifests, safe disposal certificates, contracts, etc.) and using the information to answer the following questions:

- What are the waste types?
- Where are they being generated and why?
- Where are they stored and what containers are being used?
- Who is taking them away?
- To which landfill site, treatment or recycling facility are they going to?
- What volumes / tonnes are being generated?
- How frequently are the different waste types removed?
- What incidents are occurring and why?

4.1.2 DEVELOP AN INVENTORY OF YOUR WASTES

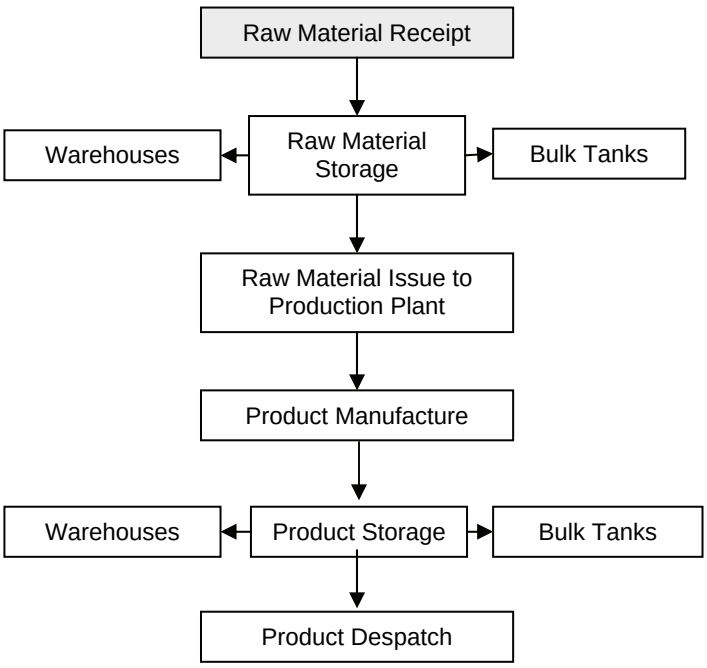
It is highly recommended that you develop a waste inventory. If possible, use a table or spreadsheet. The types of headings that you can include are:

- Waste stream
- Point of generation
- Classification - using the South African National Standard 10228 for the Class and the Minimum Requirements documents for the Hazard Rating – See Chapter 6 on waste classification)
- On-site treatment
- Treatment facility
- Disposal site
- Disposal method
- Recycling facility
- Monthly volumes
- Responsible contractor(s)

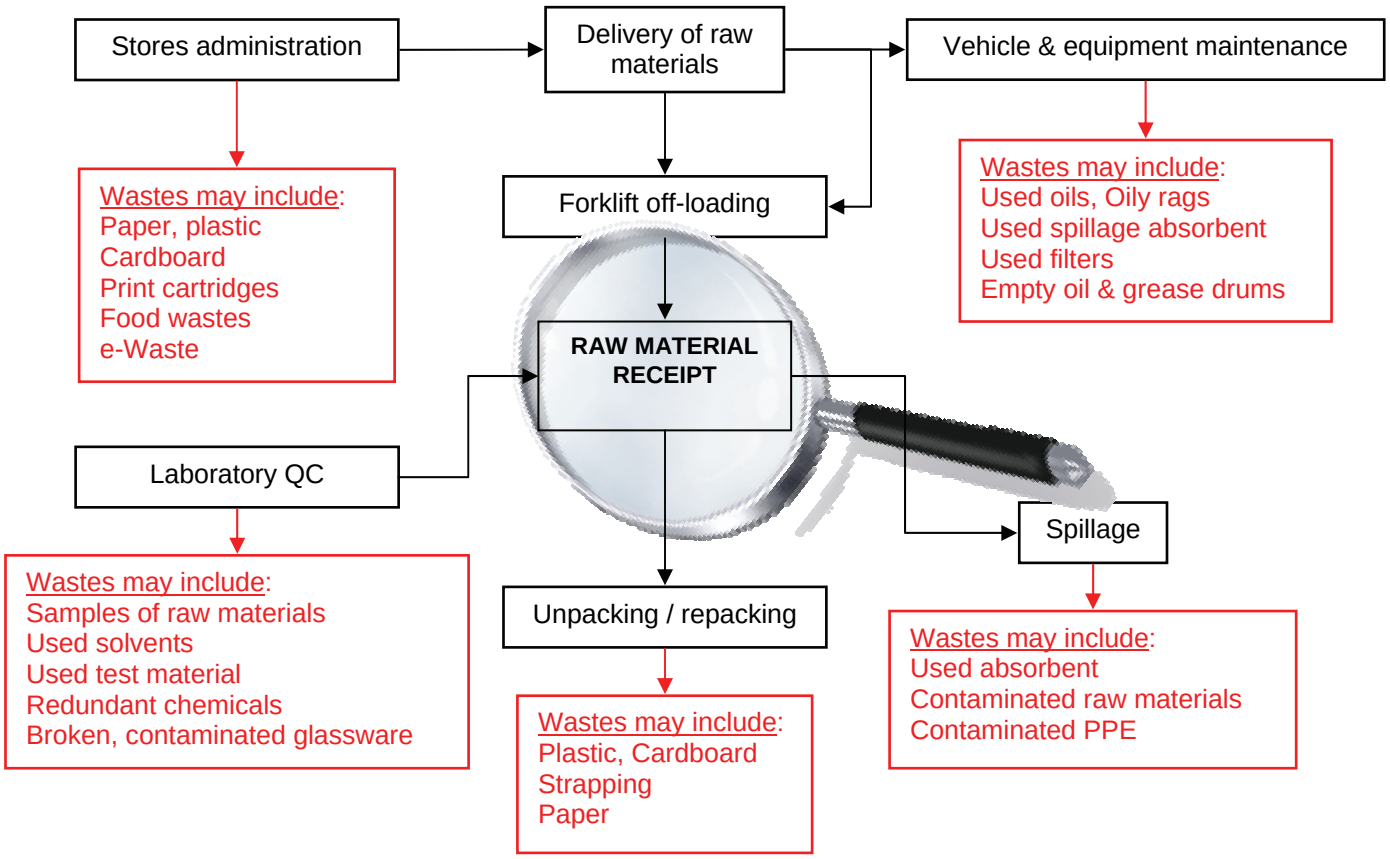
4.1.3 ESTABLISH WHAT OTHER WASTES YOU GENERATE

In following the historical paper trail, you may find that you do not have a full list of all the wastes that you produce. It is important to do a thorough walk-through of your facilities and speak to the employees and contractors involved. It makes it easier if you divide up your company's operations into sections and then investigate each section to review the waste management practises.

Flow charts can be useful in streamlining the process, for example:



After you have done this, look at each 'block' in your flow chart and break it down into further flow charts if necessary. Identify the waste streams for each step. An example is shown in the next diagram, where the Raw Material Receipt Block has been further broken down – see next page.



Use your computer spreadsheet inventory to keep track of your wastes. This will assist you in complying with the legal requirements associated with existing legal requirements as well as the National Environmental Waste Management Act, when it is finalised and implemented.

Set up the spreadsheet so that you know on a monthly basis how much waste was generated, how much was sent off-site for reuse and recycling and then how much was discarded in the landfill. These statistics will enable you to track your progress, to identify opportunities for improvement and can also be used for environmental performance reporting. As your system improves, you can then add the waste streams that are discharged to air and to sewer. This will help you to integrate your waste management activities and information systems across all media which is best practise.

If you have many waste streams, it may be better to use different spreadsheets for discharges to air and to sewer, to keep the system manageable.

TIPS!

Look in the waste containers at your operation to see exactly what is discarded and where.

Do not underestimate the knowledge of your employees and contractors – involve them in the process!

Observe the housekeeping practises.

Monitor the operations at different times of day, week and month to get a better idea of what is generated.

To get you thinking here are some examples of waste types you will find:

Waste Type	***Examples***
Non-industrial solid waste	Office paper, plastic, food wastes, printer cartridges, sanitary waste, health care risk waste, builders rubble, e-waste, office furniture, packaging material, etc.
Non-industrial liquid waste	Used cooking oil, redundant cleaning chemicals / pesticides, laboratory waste, etc.
Industrial solid waste	Packaging material (clean or contaminated), wood (including sawdust), scrap metal (clean or contaminated), spent batteries (automotive, nickel-cadmium, etc.), tyres, oily rags / oil filters, used absorbents, asbestos (cement products / lagging), contaminated soils, filter cake medium, fluorescent tubes, ash, foundry sands, floor sweepings, builders rubble, spent catalysts, resins, etc.
Industrial liquid / sludge waste	Use oil (hydraulic oil / lubricating oil / automotive oil), transformer oils (PCB contaminated?), effluents, redundant chemicals, off-spec batches of product, waste by-products, tank bottom sludges, washbay sludges, solvents, spent metal plating solutions, adhesives, acids/alkalis

THE 80/20 PRINCIPLE

Use 80/20 principle to start the process of managing your wastes.

Prioritise the larger volume wastes and those which cost the most to manage (usually the more hazardous streams).

Also remember the following:

- Wastes are easier to manage when they have been separated at source. It is less safe to separate wastes once they have been thrown away.
- Get some quick wins - identify the wastes which can be easily recycled and reused, such as glass, paper, plastic, metal and turn a cost into a financial and environmental benefit.
- Set achievable targets for improvement.
- Track your progress and let everyone know how you are performing on a routine basis.

You may want to appoint environmental champions to drive the process in each business area.

TIP! Don't forget about the contractors working on your site.

Companies often ignore wastes generated and removed by contractors. They <u>are</u> generated on your premises and therefore your responsibilities as a waste generator apply to these wastes as well.

Why not exclude the waste removal and disposal from their contracts – that way you get to decide how the wastes will be managed and disposed and you may even get better rates from your waste contractor.

In addition, don't forget to add these wastes to your inventory and monthly statistics.

4.2 How Do You Identify Hazardous Wastes?

Hazardous wastes are wastes which may cause injury, ill-health, death and / or environmental damage because of the following properties:

- Ignitable
- Corrosive
- Reactive
- Toxic / Infectious

MINIMUM REQUIREMENTS DOCUMENT

Hazardous Waste is waste that has the potential, even in low concentrations, to have a significant adverse effect on public health and the environment because of its inherent toxicological, chemical and physical characteristics.

<u>Hazardous Waste requires stringent control and management, to prevent harm or damage and hence liabilities</u>.

It is important to find out as much information about the waste streams to be able to assess the nature of the wastes. This information can be found by reviewing the MSDSs of the chemicals going into your processes and those of the intermediate and final products produced by your company.

If the wastes contain a substance that is listed in SANS 10228, the waste will be considered hazardous until proven otherwise.

DID YOU KNOW?

Did you know that the following waste streams are considered to be hazardous?

- Old fluorescent tubes
- Batteries
- Oily rags
- Containers that were used to store hazardous chemicals

4.2.1 Ignitable Wastes

Flammable liquid (ignitable) wastes are wastes which give off flammable vapours at or below 60.5°C. The vapours can ignite and cause fires, thereby creating a hazard.

Solid flammable wastes can burn easily:

- By a spark or flame
- Though friction
- Through contact with air

Flammable solid wastes may also emit flammable gases when wet.

4.2.2 Corrosive Wastes

Corrosive wastes are solids or liquids that have a high (alkaline) or low (acid) pH. They can burn your skin, irritate your eyes and/or affect your breathing. They can cause damage to metals and other packaging material.

Corrosive wastes are hazardous to the landfill as they destroy the micro-organisms

present in the site by altering the pH conditions. This then hampers the biodegradation process that takes place. These wastes therefore need to be neutralised before disposal takes place.

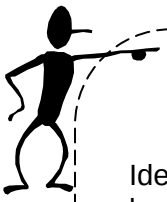
4.2.3 REACTIVE WASTES

Reactive wastes are those that are unstable under certain conditions. They can be sensitive to impact, friction, temperature, moisture, or mixing with other substances. The reaction can cause fires, dangerous fumes or explosions.

4.2.4 TOXIC AND INFECTIOUS WASTES

Toxic and infectious wastes have the ability to cause death or disease. They may also cause cancers, mutations and birth defects.

Infectious wastes are generated in health care facilities, so do not forget to look at your Occupational Health Clinic. If this function is outsourced, remember to include the storage, treatment and disposal of these wastes in the contract. It is also important to audit this area on a regular basis.



REMEMBER!

Identifying waste as potentially hazardous is the first step in the waste management process. Many subsequent decisions are made based on this initial evaluation:

- Minimisation / recycling opportunities
- Classification
- Handling procedures
- Storage arrangements
- Transportation
- Treatment / Disposal

If you don't get the identification process correct, then the necessary health, safety and environmental arrangements for all subsequent management practises may be inadequate.

4.3 WHAT ABOUT HEALTH AND SAFETY?

Identifying which of your wastes streams is hazardous is vitally important from a health and safety perspective. Remember that hazardous wastes have the potential to impact on the health and safety of:

- Your company employees
- Your contractors
- The waste transport collection employees
- The disposal / recycling / treatment facility's employees, other users of the facility and possibly the surrounding community.

Hazardous wastes can enter the body through a number of routes depending on the chemical concerned.

Skin Contact Some chemicals pass easily through the skin whereafter they enter the tissue / blood

- Acids and alkalis can burn the skin
- Other chemicals can irritate the skin and cause dermatitis
- Some solvents can dissolve the oils in the skin, leaving it dry, cracked, and susceptible to infection and absorption of chemicals

Inhalation

- Some chemicals can enter your lungs and thereafter be transferred to the blood causing death or disease
- Some solid particles may get lodged in the lungs and cause cancer like diseases
- Some chemicals are irritants and cause nose or throat irritations or occupational asthma
- Some chemicals may also cause discomfort, coughing or chest pain when they are inhaled and come into contact with parts of the lung

Ingestion

- Bad hygiene practises may cause you to ingest (eat) the chemicals, for example not washing hands before eating and / or smoking
- Dusts are easily ingested

Eye Contact

The eyes are easily harmed by chemicals.

- Some chemicals may burn or irritate the eye
- Sometimes they may be absorbed through the eye and enter the bloodstream
- Infectious wastes (such as blood) can be splashed into the eyes and cause harm

REMINDER!

Regulation 9A of the Hazardous Chemical Substances Regs requires you to have a 16 point (headings) MSDS to cover the HCS that you handle. From a safety and health perspective, this MSDS contains information such as points:

3 – Hazard Identification
4 – First Aid Measures
8 – Exposure Controls/Personal Protection

4.4 WHAT ARE E-WASTES?

e-Wastes consist of any electrical or electronic appliances that are no longer used and require discarding. They are considered hazardous due to their persistent organic pollutant and heavy metal content such as lead, mercury and cadmium. e-Waste includes computers, televisions, refrigerators, cellular telephones, instrumentation, batteries, etc.

A global concern is the trend of organisations sending their out of date equipment to developing countries, as a "donation". Many of these items are not able to be used and thus end up as the recipient's problem to dispose of correctly. In many cases, there are insufficient facilities or awareness and disposal contributes to pollution in areas where it causes a significant impact on the local communities.

Some structures exist in South Africa to deal with e-waste in an environmentally sound manner. Have a look at the Electronic Waste Association of South Africa (eWASA) website (www.e-waste.org.za) for a list of known recyclers, refurbishers, collection points, green channels and buy-back centres.

The ideal option for e-waste is to include in your contract with your suppliers a policy for returning redundant and discarded equipment to them for recycling, reuse and responsible disposal. This will encourage them to institute an Extended Producer Responsibility program where they discharge their duty of care responsibilities throughout the lifecycle of the products that they make and sell.

TIPS!

Waste management is a core busines issue.

It is EVERYONE'S responsibility, in all departments and levels of the organisation to manage wastes. Line Supervisors and Managers are responsible for implementing and maintaining the programmes developed by the Safety, Health and Environment Department.

If you don't measure it you can't manage it.

Use your inventory and spreadsheets to track your waste streams. Set targets and report back to both management and the employees. Set waste management targets for all your contractors working on site. This will also help to raise housekeeping standards and awareness.

CHAPTER FIVE: APPLICATION OF THE WASTE HIERARCHY

SUMMARY

What is the Waste Hierarchy?

- Working through the following steps:
  - ✓ Avoid producing waste – can you change the process?
  - ✓ Reduce the waste – can you reduce volume/mass or reduce the toxicity?
  - ✓ Reuse the waste – can you put a waste steam back in your process?
  - ✓ Recycle the waste – can you send the waste for reclamation?
  - ✓ Treat the waste – are any other treatment technologies available?
  - ✓ Dispose of the waste to landfill as a last resort

How will you benefit from applying the Waste Hierarchy?

- Reduced costs.
  - ✓ Improvement in housekeeping.
  - ✓ Reduced liability.
  - ✓ Improved corporate image.

What is Zero Waste?

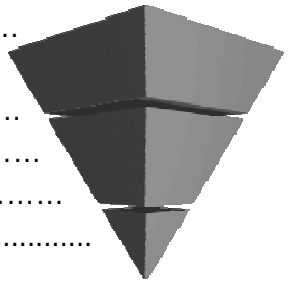
- The concept of the redesign of the way resources and materials flow though society and holding producers responsible for their products from cradle-to-cradle – meaning that no waste ends up in landfill sites.

5.1 WHAT IS THE WASTE HIERARCHY?

The traditional approach to waste management in South Africa has been to focus on the disposal of wastes to landfill. As the country develops and more wastes are produced, this practise places an increasing burden on landfill space, waste collection resources and on the environment.

One of the objectives of the White Paper on Integrated Waste Management and Pollution Control of 2000 was to encourage a shift in this approach to a culture of waste avoidance and minimisation. What this means is that we need to turn the traditional waste management 'triangle' upside down and focus all our energies from the 'base' to the top so that as little waste as possible ends up at the triangles 'tip' or the landfill site.

Avoid……..
Reduce……
Reuse……
Recycle……
Treat……
Dispose responsibly…..



Avoid: prevent the waste from being generated

Reduce: reduce the volume of wastes being produced and / or reduce the toxicity of the waste

Reuse: reuse the waste in the same or another process (the physical form of the waste does not change)

Recycle: the waste is reclaimed in another process (normally alters the physical form)

5.2 WHAT ARE THE BENEFITS?

Waste minimisation centres on preventing and reducing wastes at source. There are many benefits to the application of the waste hierarchy and waste minimisation.

Reduced costs

- More efficient resource usage – reduced use of raw materials including water and energy
- Less waste produced – less to manage and dispose
- Less hazardous waste produced and cheaper disposal options

Reduced liability

- Better compliance with legal requirements
- Less hazardous waste – reduction in potential liabilities associated with handling, storage, transport and disposal

Corporate Image

- Initiatives that benefit the environment and associated health and safety advances can improve your:
  - Image in the marketplace
  - Community relationships
  - Interactions with environmental organisations
  - Employee well-being and productivity
  - Relationships with the authorities

TIP!

'The cost of your waste is not so much the cost of getting rid of it, as the value of what you are getting rid of!'

Waste Minimisation: An Environmental Good Practice Guide for Industry, 2001. UK Environment Agency

5.3 How Do You Start?

The Clean Technology Centre in the Cork County, Ireland, has a very useful document entitled *'How to Prevent Waste and Emissions from your Company – A Self-help Guide'.*

In this document several approaches are advocated – see below:

USEFUL APPROACHES AND ASSOCIATED EXAMPLES TO WASTE MINIMISATION

IMPROVED PRACTISES

(a) Operating

For example – scheduling batches of product that reduces vessel cleaning requirements

(b) Maintenance

For example – preventative maintenance programs to repair pipework before leaks or ruptures occur

(c) Inventory

For example – implement stock management to prevent generating expired raw materials

(d) Housekeeping – employee behaviour

For example – collect spilled material for reuse

PROCESS / TECHNOLOGY MODIFICATION

For example – ensure better filtration of solids from effluent

MATERIAL SUBSTITUTION

For example – replacing solvent based paints with water based paints

PRODUCT MODIFICATION

For example – producing thermometers that don't contain mercury

Using any or all of these approaches, each of the waste streams in your inventory needs to be assessed to determine if the waste can be avoided, reduced, reused, recycled or treated. Disposal to landfill should only be considered once all other alternatives have been considered and rejected.

5.3.1 Can The Waste Be Avoided?

Rather than recycling, treating or disposing of the waste, the first prize of waste minimisation is to prevent the waste from being generated in the first place!

You need to look at ways of achieving this within your company.

EXAMPLES

(1) What about reviewing the packaging that your raw material is delivered in? Can you order material in bulk – for example if you use large numbers of 210 ℓ drums, what about asking your supplier to supply the product in 1 ton flow bins that can be returned for re-filling?

(2) If your product is sold in bags and one of your waste streams includes damaged bags, watch how the bags are damaged and then see how this can be prevented. Get the employees from that work area to record how many bags are being damaged and ask them how best this can be prevented. Work out the cost of the damage on a monthly and annual basis and then show the employees how this money can be saved if the damage is prevented. Will a project need to be initiated to prevent damage by a change in process or is it linked to behaviour?

It is essential to work with the supervisor of the area and those directly involved ensuring that you address the problem in a sustainable manner.

5.3.2 *CAN THE WASTE VOLUME BE REDUCED?*

Although not as environmentally advantageous as preventing the generation of waste, you may be able to minimise the volume (or mass) of waste that you generate.

Landfill space is a valuable resource and it is becoming increasingly difficult to find and establish new facilities. By reducing the volume of waste going to landfill, the lifespan of the existing landfills is extended. Waste reduction is also beneficial to your company as the more waste you divert from landfill, the less your potential long-term liabilities (that is as long as your alternative is an environmentally sound choice!).

EXAMPLES

(1) Office employees can go through huge amounts of paper. Introduce a standard policy to print documents double-sided. Re-use the clean side of scrap paper for draft printing work.

(2) Ensure that your employees separate hazardous from non-hazardous waste. If your waste contractor finds mixed waste, the entire load will be considered hazardous and end up costing you more money!

(3) If you are disposing of excess volumes of used absorbents investigate the route cause. Review employee behaviour. Spill kits should be used for incident management and not to mop-up sloppy housekeeping practises. Don't forget to review material handling as perhaps regular spillages are unavoidable using your current work methods.

5.3.3 *CAN THE TOXICITY OF THE WASTE BE REDUCED?*

Waste is classified as either hazardous or non-hazardous. For the former, the hazardous nature may be due to a mixture of constituents, or from a single chemical. In order to reduce the hazard associated with the waste, it is essential to understand the waste chemically as well as its predicted fate in the environment. Use the Material Safety Data Sheets (MSDSs) to obtain this information.

You may be able to treat the waste to form a less hazardous or toxic waste. For example: A waste containing certain heavy metals can be treated to raise the pH making the toxic heavy metals less likely to leach into the environment

SUBSTITUTION OF PRODUCTS AND RAW MATERIALS

Another way of reducing the toxicity of your waste is by the substitution of chemicals or materials.
For example:

- Replace asbestos products with an environmentally friendly alternative and then you will only be generating general waste in the future
- Review the types of solvents that you are using – is there a less hazardous or toxic product available that will obtain the desired results?

Maybe a neighbouring industry has a waste stream that can treat your waste. Make sure you test the resulting mixture to ensure that the final product is less harmful and that further hazards have not been created. Your waste contractor may be able to assist you with this process should you not have suitable laboratory personnel or equipment.

5.3.4 *CAN THE WASTE BE REUSED?*

Have a look at your wastes and see if there are any that can be re-used. It is better to reuse your wastes within your own facility if possible as then you have better control.

EXAMPLES

(1) Is it feasible to keep the first rinse wash water from your reactors and use it as part of the raw materials in the next batch? This will save on water, raw material and waste costs.

(2) Can one of your wastes be used as a raw material for another process?

5.3.5 *CAN THE WASTE BE RECYCLED?*

Once you have exhausted all options on-site, have a look at what wastes can be recycled off site. Recycling may involve:

- The reclamation of components of the waste such as reprocessing wastes containing heavy metals to reclaim the metals or
- Processing of the waste to produce other by-products

For example lead-acid batteries may be recycled to produce granulated plastic and lead ingots for reuse. The acid electrolyte solution is neutralised and disposed to sewer.

IMPORTANT!

You may think by recycling you are choosing the best environmental option. Make sure that you audit your recyclers' environmental practises and legal compliance status.

Sub-standard recycling practises could end up being a liability to company!

5.4 *WHAT IS THE BEST OPTION FOR DISPOSAL?*

Once the waste stream has been subjected to the scrutiny of the Hierarchy of Waste, the leftover or residual waste may be considered for responsible disposal to the environment.

An assessment will need to be made to determine the best way of disposing of the waste:

- To landfill? Subject to waste classification.
- To sewer? Subject to a permit from the local authority and compliance with discharge parameters.
- To river? Subject to a water use permit and compliance requirements from DWAF.
- To sea via a pipeline? Subject to a water use permit and compliance requirements from DWAF / or subject to a permit from the controlling authority and compliance requirements.
- To a treatment facility? Subject to the facility's permit conditions.

Ask your waste contractor if there are alternatives for the disposal of highly hazardous waste by encapsulation such as a rotary kiln treatment process.

You may be interested to know that the Department of Environmental Affairs and Tourism has launched an initiative to develop a National Policy on the Destruction of Waste through high temperature thermal treatment and the use of selected hazardous and general waste in cement kilns.

It is important to assess the fate of the waste in the environment. You may need a professional to assist with finding the best option for your wastes in terms of environmental and financial issues. There are also legal requirements associated with the option you have chosen that must be investigated to ensure that compliance by both the generator (you) and the contractor (owner/operator of the disposal / treatment facility) is achievable.

DID YOU KNOW?

Matter can neither be created nor destroyed:

- If waste is incinerated, some of the hazard is reduced, but there is still residual waste that is disposed of to air (gases) and to land (ash).
- If waste is discharged to sewer, some of the hazard is treated; the rest is transferred to the river and/or sea.

5.5 TOWARDS ZERO WASTE?

The concept of zero waste was formalised in South Africa in the Polokwane Declaration developed at the first National Waste Summit, hosted by the Department of Environmental Affairs and Tourism in September 2001.

According to the Grassroots Recycling Network (www.grrn.org), Zero Waste is a design principle that seeks to redesign the way resources and materials flow through society. Zero Waste requires holding producers responsible for their products and packaging ***from cradle to cradle***. The goal is to promote clean production, prevent pollution, and create communities in which all products are designed to be cycled safely back into the economy or environment.

The Zero Waste International Alliance (www.zwia.org) is working towards a world without waste. It was established to promote positive alternatives to landfill and incineration and to raise community awareness of the social and economic benefits to be gained, when waste is regarded as a resource upon which employment and business opportunities can be built. According to the Alliance, many large industries are realising the true cost of waste to their shareholders.

Toyota, Dupont and others are pursuing Zero Waste as the only practical road to improved efficiency and profit.

The following ***Zero Waste Business Principles*** form the basis for evaluating the commitment of companies to achieve Zero Waste and assist stakeholders to evaluate the resource efficiency of companies.

- Commitment to the triple bottom line (economic, social and environmental)
- Use of the Precautionary Principle
- Zero Waste to landfill or incineration
- Take-back products and packaging
- Buy reused, recycled and composted items
- Prevent pollution and reduce waste
- Use economic incentives for customers, workers and suppliers
- Products or services sold are not wasteful or toxic
- Use non-toxic production, reuse and recycling processes

NOTE!

You need to regularly look at the best way to deal with your wastes that minimises the environmental impact.

The following are types of questions that need to be asked as technology improves and new ways are found to reduce costs in the workplace:

- Is it better for the environment to settle the solids in your wastewater and then dispose of these to landfill rather than to sewer?
- Can some of the wastewater be kept separate and recycled or reused before being discharged to sewer?
- Do the solid wastes contain valuable raw materials which can be reused in the process?
- Do you have wastes that others may use as raw materials in their process? See the Cape Metro Integrated Waste Exchange Website : www.capetown.gov.za/iwex
- Can your wastes be used to neutralise your own wastes or wastes from other organisations?
- Are there any new technologies that are available that may now be of benefit to your waste management programmes?

CHAPTER SIX: WASTE CLASSIFICATION

SUMMARY

Why classify your wastes?	▫ To distinguish between a hazardous and non-hazardous waste; to establish the most hazardous component of the waste stream; to calculate the degree of hazard posed to the environment; and to determine pre-treatment and disposal requirements, thereby ensuring that your waste is legally disposed of at the correct landfill site. ▫ You may also be able to use the classification process to delist some of your wastes to reduce the hazard rating and reduce the costs of disposal.
The type of information you will need	▫ Process producing waste; waste constituents; variability of waste stream; physical properties, etc. ▫ You will also need to decide how best to sample the waste for analysis if necessary.
SANS 10228	▫ Using SANS 10228 is the first step in the classification process as you need to allocate your waste into one or more of 9 different classes of dangerous substances.
The waste Hazard Rating	▫ Wastes fall into four different hazard ratings according to how hazardous they are. These hazard ratings are used to confirm what landfill site the waste can be disposed of.
Delisting by treatment	▫ You may be able to apply different treatment technologies to reduce the toxicity of your waste stream and thus change the hazard rating of the waste. ▫ This may allow the waste to be disposed at a lower hazard landfill site or even certain general waste sites – subject to approval by the authorities.

Ensure that you have a copy of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste on hand. It can be obtained from www.dwaf.gov.za

6.1 GENERAL

The classification of hazardous waste is a complex process and is covered in detail in the *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste*. The aim of this chapter is to give you a basic understanding of the requirements. You will still need a specialist to help you classify your wastes.

MINIMUM REQUIREMENTS DEFINITION
HAZARDOUS WASTE

'An inorganic or organic element or compound that, because of its toxicological, physical, chemical or persistency properties, may exercise detrimental acute or chronic impacts on human health and the environment. It can be generated from a wide range of commercial, industrial, agricultural and domestic activities and may take the form of liquid, sludge or solid. These characteristics contribute not only to degree of hazard, but are also of great importance in the ultimate choice of a safe and environmentally acceptable method of disposal." generated, thereby focusing on disposal only'*

6.2 WHY CLASSIFY YOUR WASTES?

In accordance with the Precautionary Principle, wastes must be treated as highly hazardous until proven otherwise. If you do not classify your wastes, it is impossible to know how to handle, store, treat, transport and dispose of the wastes in a way that you do not endanger your employees, your contractors or the receiving environment.

6.3 THE DIFFERENT TYPES OF DISPOSAL SITES

Not all wastes can be disposed at general waste landfill sites. Some wastes are regarded as hazardous and need to be disposed at a hazardous waste landfill site. There are two types of hazardous waste landfills. An HH (high hazard) landfill site can accept wastes that are more hazardous than those accepted at an Hh (low hazard) landfill site. The classification process will determine at which class landfill site your wastes may be disposed.

In certain circumstances, it may even be possible to treat your hazardous waste so that it becomes acceptable for disposal at certain general waste landfills with leachate collection systems. These are designated as GLB+ sites. You may also be able to treat your waste in such a way that it may be used in alternative processes (for example as part of road construction material). In both these circumstances, prior written approval from the Department of Environmental Affairs and Tourism is required.

LANDFILL SITE CLASSIFICATION

Hazardous Waste Landfills – 2 types:

HH = High hazard landfill

Hh = Low hazard landfill

General Waste Landfills – many types:

Two examples:

GLB+ = ***(G)*** *General,* ***(L)*** *Large,* ***(B+)*** *The site produces leachate*

GLB- = ***(G)*** *General,* ***(M)*** *medium Large,* ***(B-)*** *The site does not produce significant leachate*

6.4 THE OBJECTIVES OF CLASSIFICATION

The objectives of the classification process may be summarised to:

- Distinguish between a hazardous and non-hazardous waste
- Establish the most hazardous component of the waste stream
- Calculate the degree of hazard posed to the environment
- Determine pre-treatment and disposal requirements

The approach of the Min Reqs document is to determine the risk that the waste poses to the:

- Surface water and groundwater
- Soils
- Air (health & safety)

6.5 WHAT TYPE OF INFORMATION DO YOU NEED FOR WASTE CLASSIFICATION?

As the generator of the waste, you are the best person to know what your waste streams are most likely to contain. You know your raw materials, the processes and by-products involved. It is not appropriate to expect your waste contractor to be exclusively responsible for the classification of your wastes.

You need to collect as much information as possible regarding each waste stream as this will assist you in discussing the best way to classify your waste streams with your waste contractor.

If your waste is a pure product you will be able to classify it according to the information contained in the MSDS. This is relevant for example, to redundant or expired chemicals. For other complex waste streams you will need to sample the waste and have it analysed to determine the constituents.

INFORMATION TO ASSIST WITH CLASSIFICATION

Process Producing the Waste

What are the raw materials, the intermediates in the process and the finished products? Use a flow chart.

Waste Constituents and Chemical Properties

What are the expected constituents?

Is the waste flammable / toxic / corrosive?

Will the waste react with any other substances?

It is your duty and responsibility to inform the waste contractor of the potential health and safety risks associated with the waste stream.

Variability of the Waste Stream

These questions are important from a sampling perspective. Is the waste produced:

As a once-off from the process?

From a continuous process and likely to be the same quality at all times?

From a batch process making different products and will the constituents vary considerably?

Physical Nature of the Waste

The physical nature of the waste is important from a sampling and classification process:

Is the waste the same throughout – is it homogenous?

Does the waste separate into different phases and if so, how will a representative sample be obtained?

What is the colour of the waste?

Does the waste have a strong odour?

Is it a solid or liquid or sludge?

Waste Storage

How is the waste stored on-site once generated?

Is it stored on one large tank / in dams / in drums / in stockpiles?

6.6 *SAMPLING AND ANALYSIS*

It is important to sample and analyse your wastes to confirm what is present in the waste stream. It is also necessary to compare the constituents against the legal requirements for classification and disposal to landfill. As the generator it is your responsibility to ensure that your wastes are classified correctly.

Sampling and analysis is not always directed at disposal. You may want to sample and analyse your waste stream to determine recycling / recovery opportunities, for example how much solvent / valuable metals is in the waste stream.

Before you sample it is important to take the following into consideration:

- *Chemical constituents* – what are the safety risks?
- *Sample points* – are they accessible; will it require confined space entry; how will you open the drums?
- What *sampling equipment* is going to be used?
- *Number* of *samples* – how many samples are needed to ensure that they are representative of the waste stream?
- What *type of sample* – composite; samples from different phases; once-off sampling or sampling at regular time intervals (based on information sourced)
- What *type of sample bottle* are you going to use? (***Reminder***: Regulation 14(c) of the HCS Regs: *Any container into which an HCS is decanted is clearly labelled with regard to the contents thereof*).
- Are there *preservation requirements* for the sample and how should it be stored prior to despatching for analysis?
- What *quantity* does the laboratory need to perform the tests?

All these issues need to be discussed with your waste contractor and the laboratory that will be analysing the sample.

The tests required for classification are a full analysis to determine all the individual constituents (such as lead) of the wastes and the concentration of each constituent. This should be done by a laboratory other than your own as so that you have an independent set of results.

CONSIDER THIS!

It is important to ensure that sampling is done correctly!

If health and safety considerations are not taken into effect, the sampler and the lab analyst can be placed at risk.

If representative samples are not taken the lab results may not lead to the correct classification:

- Wastes may be disposed at the incorrect landfill site – you may face legal ramifications!
- Money will be wasted – lab tests are expensive!
- You may send your wastes to a higher classification landfill than is necessary and this will cost you more money!

IMPORTANT!

Once the initial tests have been done, you will also need to discuss with your waste contractor what the testing frequency should be to ensure that the waste classification remains valid.

UNLESS YOUR PROCESS AND WASTE REMAINS 100% CONSISTENT, WASTE CLASSIFICATION IS NOT A ONCE-OFF EXERCISE!

6.7 WHAT IS THE SANS 10228 CLASSIFICATION?

The Minimum Requirements classification system requires you to assign your wastes 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 SANS 10228, hazardous substances are given an identification number and are classified into nine classes as detailed below.

The SANS 10228 Classes and Waste Disposal Restrictions

CLASS 1 = Explosives	Direct disposal of Class 1 wastes is PROHIBITED. Class 1 wastes to be pre-treated (destroyed).
CLASS 2 = Gases	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.
CLASS 3 = Flammable liquids	Landfilling of flammable liquids, flashpoint < 61°C is PROHIBITED. Flammable liquids to be treated to flashpoint > 61°C.
CLASS 4 = Flammable solids	Landfilling of flammable solids is PROHIBITED. Flammable solids to be treated to non-flammability.
CLASS 5 = Oxidising substances and organic peroxides	Landfill of Oxidising Substances and Organic Peroxides is PROHIBITED. Treatment to neutralize oxidation potential must be carried out.
CLASS 6 = Toxic and infectious substances	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.
CLASS 7 = Radioactive substances	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.
CLASS 8 = Corrosives	Disposal of Corrosive Substance, pH < 6 and/or pH > 12, by landfill is PROHIBITED. Corrosive Substance to be treated to pH 6-12.
CLASS 9 = Miscellaneous dangerous goods and substances	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 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 you can see from the previous diagram various types of treatment may be necessary before certain classes of waste may be landfilled.

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.*

6.8 WHAT DOES THE HAZARD RATING MEAN?

Assigning the waste into the SANS Classes and performing the required treatment is only the first step in the classification process. You now need to ensure that the treated residue is assessed in terms of toxicity. 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 tell you which class landfill site a hazardous waste must go to for disposal.

HH or Hh Disposal?

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

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

The hazard ratings are obtained by looking at the lethal dose (LD) and lethal concentrations (LC) values of the constituents in your waste:

- Acute mammalian toxicity values = LD_{50} values
- Acute ecotoxicity values = LC_{50} values

These values represent the concentration of a hazardous substance which would kill 50% of a population of rats (LD_{50}) or fish (LC_{50}) under controlled conditions. It therefore tells you how toxic a hazardous substance is.

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_{50} (Oral) ppm	LD_{50} (Dermal) ppm	LD_{50} (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_{50} ppm
HR1	<1
HR2	1-<10
HR3	10-<100
HR4	100-<1000

Once you have assigned your wastes into a specific hazard rating, you are now ready to see if the waste delists to a lower hazard rating.

6.9 WHAT DOES DELISTING MEAN?

Delisting is a complex process and this section will help to explain the terminology involved in the process. Your delisting calculations can be performed by your waste contractor or an independent laboratory with the relevant expertise.

CAUTION!

If you have 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 you will need to check that the landfill site has written approval to do this.

If you want to do the delisting calculations yourself, then it will be necessary to study the latest editions of the *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste* document in greater detail.

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
- 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)]: this is a factor based on the LC_{50} (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 cause the death of one in three hundred thousand fish in an aquatic environment.

The Estimated Environmental Concentration (EEC): This is 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] hazardous substances with hazard ratings 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 for that specific landfill site.*

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

6.10 *DELISTING BY TREATMENT*

There may be opportunities for you to delist your 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 you have treated your wastes, you may ask the laboratory to 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 disposed.

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 you have waste streams that are disposed at lower category landfill sites due to a delisting process, you must obtain written proof that the landfill site has been authorised to accept that waste.

For example, if you had a HR1 waste like fluorescent tubes, you would have to dispose of these to a HH landfill. If, however, you or the landfill operator applies appropriate treatment technologies the waste may delist to an Hh landfill site.

In this case, you need to ensure that the landfill site permit states that this waste stream can be accepted. If not, there may be a permit amendment authorising the disposal of this waste stream but you will need to obtain a copy of this authorisation for your records.

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

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.

E.g. the landfill site may be closed to mercury containing wastes once it has reached the limit for mercury.

Always ask for a copy of the waste classification report from the laboratory or your waste contactor. 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.

REMINDER!

Regulation 9A of the HCS Regs requires you to have a 16 point (headings) MSDS to cover the HCS that you 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_{50} values

12 – Ecological Information (environmental toxicity) – LC_{50} values

13 – Disposal considerations (these are normally international requirements depending on the source of the MSDS)

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

CHAPTER SEVEN: WASTE HANDLING AND STORAGE ON SITE

SUMMARY

Environmental issues associated with waste storage	▫ Overflowing containers ▫ Uncontained litter ▫ Raiding of waste from containers ▫ Leaking containers ▫ Odours and flies ▫ Mixing of hazardous and non-hazardous wastes
On-site waste management facilities	▫ Hard surfaced storage areas ▫ Covers ▫ Drainage ▫ Bunding ▫ Access control ▫ Spill kits ▫ Labelling of containers ▫ Compliance with hazardous waste storage time periods ▫ Fire extinguishers ▫ Signage ▫ MSDSs
Outsourcing your on-site waste management function	▫ Benefits may include: ▫ Dedicated, trained personnel ▫ Specialised equipment ▫ Maximising of potential income from separated streams ▫ Overall increase in waste separation ▫ One integrated service – better pricing structures
Responsible container management	▫ Ensure systems are in place to prevent containers previously holding hazardous chemical substances from entering the informal waste stream.
Permitting requirements	▫ Section 20 Environment Conservation Act permits ▫ Local authority permits – Registration Certificate in terms of Fire Bylaws if quantities of flammable wastes in excess of the prescribed limits are stored on site

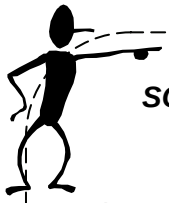
7.1 GENERAL

Housekeeping, litter and pollution problems may be associated with waste handling issues.

The following questions need to be asked:

- Do waste containers overflow?
- Are there areas where litter is visible?
- Are waste containers raided (by monkeys, pests, people scavenging for items of value)?
- Do waste containers leak?
- Do waste containers smell?
- Is there a fly problem in the area?
- Are non-hazardous and hazardous wastes mixed?
- Is your waste bill high?
- Is the waste storage are signposted and secure?

If your answer to any of these questions is "yes", you need to look at the way you are handling waste on-site.



SOME OTHER FACTORS TO CONSIDER

What about the following issues:

- What are the legal requirements for waste storage?
- Do you have MSDSs to cover your wastes or waste classification reports?
- Would the outsourcing of your waste management function be of benefit to your organisation?
- Have you implemented a responsible container management program?
- Do you need any permits for waste handling and storage on-site?

7.2 OVERFLOWING WASTE CONTAINERS?

This is a sign that the containers need to be emptied more often. The overflow may be due to more waste being generated in the process on a certain day or time. Find out from the personnel in the area when the peak periods occur and decide, according to cost and practicality, whether to:

- Change the schedule for emptying the container
- Use a bigger container
- Use additional containers if space is limited

Also check whether bad service from your waste contractor results in overflowing containers and meet with them to resolve the issue.

Liquids and sludges are often transported in open containers and this can lead to spillages on your premises when the containers are filled. Ensure that there is a safe system for filling these containers that prevents spillages on-site as well as injuries to your employees. Also remember to contact your waste company in ample time for a service. If you leave it too late, it may rain and / or your employees will continue to fill the container and the result will be that you will have spillages on-site.

It is also important to check with your waste contractor the level where you can safely fill the container. Don't forget that the vehicle has to travel on the public roads and that if you overfill the container there is the possibility that the sludge or liquid will spill onto the road. You and your waste contractor could potentially be held liable for this pollution.

7.3 UNSIGHTLY LITTER?

You need to understand:

- Where the litter is generated?
- What items make up the most of the litter?
- Who generates the litter and why?

EXAMPLE….

Litter accumulates outside the canteen and changing rooms. It usually consists of take-away food packaging. The shift workers and contractors seem to be responsible for throwing their packets on the ground as they leave the building.

An approach to resolving this problem may include the following steps:

- Place waste containers just inside the door of the building
- Use visible signage to show what can be discarded in the containers, preferably using pictures. Where words are used, use the common languages spoken by most of the employees and contractors
- Develop a training and awareness programme to inform people of how to discard their wastes appropriately
- Audit the effectiveness of the containers regularly
- Notice and commend those who do use the containers correctly
- Discipline routine offenders according to the relevant company procedure
- What about offering incentives or having competitions for sections of the workplace that have implemented sound waste management practises

7.4 WASTE CONTAINERS RAIDED REGULARLY?

You will need to find who or what is responsible for the scavenging:

Monkeys and Pests

In a number of industrial areas in and around Durban, monkeys are a problem. Provide containers with lids and make sure the containers are emptied frequently. If the lids make it difficult to use the container consider placing the containers inside a building (if appropriate) or within a caged area.

People

Find out what is being removed and decide whether it is safe for the items to be reused or recycled. If there is no harm associated with the waste materials, develop an equitable method to make these items available to those who want them.

For containers that held hazardous chemicals or hazardous wastes, you will need to ensure that no-one can remove them for re-use. This may require:

- Making them unusable – crushing or puncturing them and / or
- Developing an accounting system to keep track of them at all times until they are removed for disposal or recycling off-site, in accordance with legal requirements.

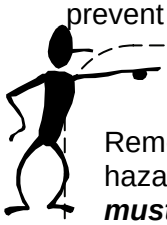
It is advisable to keep these containers in a locked, access controlled area.

7.5 LEAKING CONTAINERS?

If your containers fill up with rainwater, this will cause problems with such as:

- Increasing the volume of liquid waste, which is costly to dispose
- Jeopardising opportunities for the reuse or recycling of product such as paper and cardboard

To keep your wastes dry, store containers under cover or use a tarpaulin or lid to prevent rainwater getting in.



NOTE!

Remember if you are storing hazardous wastes, ***the containers must be leak-proof***. Check that the containers your waste contractor brings to site are in good condition and are leakproof. Check for holes in the base and sides of the containers.

Reject leaking containers!

7.6 BAD ODOURS FROM WASTE STORAGE?

If your stored wastes are causing bad odours, it could be that they:

- Have constituents that have a bad odour
- Are decomposing and causing offensive odours

You will need to find ways to prevent the smell, by for example:

- Covering the wastes (lid, tarpaulin, under a sand and lime mixture)
- Emptying the containers more often
- Keeping them out of the sun

Sometimes waste contractors send containers which themselves smell bad! It is your right to reject these containers and ask for clean ones that do not smell bad as a result of not being adequately cleaned.

7.7 FLY PROBLEM?

Flies are attracted by odours which lead them to food and they need wet material to breed. To prevent fly infestations:

- Cover wastes to keep them dry
- Keep waste out of the sun if possible
- Keep odorous wastes covered
- Empty waste containers frequently
- Ensure waste containers are cleaned after emptying

7.8 MIXING OF WASTES?

In order for the costs of waste management to be minimised, it is essential to keep the following wastes separated at source:

- Hazardous and non-hazardous waste
- Wet and dry wastes
- Waste destined for recycling or reuse
- Waste destined for landfill

Where wastes are being regularly mixed, observe how they are being generated, handled and stored, so that you can understand how and where the problem arises.

Is it a problem relating to containers and if so, can it be solved by:

- Providing more containers?
- Using different containers?
- Moving containers closer to where the waste is generated?
- Colour coding containers?
- Labelling containers and erecting signs?

Is the problem caused by human behaviour and if so, can it be addressed by:

- Providing training and raising awareness?
- Improving supervision?
- Introducing incentives and penalties?
- Developing targets with all the stakeholders?
- Regularly updating everyone on progress in achieving the targets?
- Including waste management objectives in all employees' job descriptions?
- Including waste management in the service agreements with all contractors with penalties for non-compliance?

Spill kits, because they can look like general waste containers are often used for wastes if there are no other containers conventiently located in the area. What about using cable ties to seal the spill kits to hinder unauthorised usage?

7.9 HIGH WASTE BILLS?

Waste management is costly, but even more so if the waste system is not implemented and maintained in a strategic and co-ordinated manner. The first step in bringing down your costs, is to develop your waste inventory, so you know what and how much you are generating and where it is going.

Prioritise the high volume/mass wastes and those that are hazardous. Subject each of these wastes to the Waste Hierarchy, to determine if savings can be made by avoiding and minimising the waste. After that, with the help of your waste contractor, look at ways of reducing the hazard in your hazardous wastes by treatment. These are the easy ways to reduce costs.

Effective waste management also involves changing attitudes and behaviour to waste management and ensuring everyone knows their roles and responsibilities in making the programme work. Investigate whether or not it will be better to:

- Bring waste management under the co-ordination of a single person on-site?
- Prevent contractors from using their own waste management systems?

Sometimes cost savings can be made by only allowing one waste contractor to help with managing your wastes. The increase in their turnover may increase your negotiating power and help to reduce the unit cost of containers, transport and disposal. Make sure that the contractor that you choose is reputable and ensure that you audit their systems for compliance.

CONSIDER THIS!

By the time you know that your wastes have been illegally dumped, the contractor may have vanished and you alone are left with the high cost of clean-up, as well as the fines, potential jail time and criminal prosecution.

The damage to your reputation in the market place and in the community can be higher than your waste management costs ever were. The savings you achieved by using unethical and irresponsible contractors can never make up for this.

7.10 ON-SITE WASTE FACILITIES

Waste facilities must be provided on-site to ensure that waste is stored minimising risk to people, the environment and property.

This means that containers must be:

- Stored on a hard surface away from stormwater drains
- Appropriately sized and designed to prevent overfilling and spillages
- Emptied regularly to prevent overflows
- Covered to prevent filling with rainwater
- Secured to prevent unauthorised reuse and recycle of items

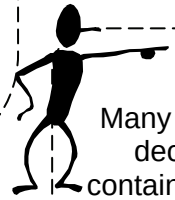
Hazardous waste must be kept in containers that are:

- Appropriate for their contents to prevent leaks and spillages
- In good condition
- Labelled to show their contents during storage and transportation.
- Marked with accumulation start dates

For waste liquids and sludges, you need to use leak-proof containers. The storage area needs to be hard surfaced and bunded to prevent contamination of water resources and the soil in the event of a spillage.

Additional steps should be in place in areas where hazardous wastes are stored, including:

- The names, and phone numbers of the emergency coordinator and other response personnel on-site
- Fire extinguishers placed in strategic locations near the storage area
- Easily accessible spill containment equipment
- Work instructions for hazardous tasks such as the crushing of fluorescent tubes



IMPORTANT!

Many spillages occur when employees are decanting liquids / sludges into waste containers. Ensure you have developed safe working procedures to cover this task!

What is Best Practice for Waste Storage and Handling on Site?

- All waste is stored in a central area before going off-site for reuse, recycling, treatment or disposal
- The storage area is hard surfaced to prevent soil and groundwater contamination

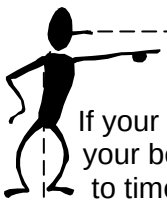
- Drains or bunding is installed to prevent contamination of stormwater in the event of a spillage
- Cover is provided to prevent rainwater affecting the waste
- The area is secured to prevent unauthorised access and removal of waste
- Signs to designate where each waste stream is stored, the constituents, the hazard
- Hazardous waste is appropriately secured to minimise the risk to people, the environment and property
- Date that storage commenced marked on hazardous waste containers
- Incompatible materials are stored separately and in compliance with all legal requirements
- Emergency response equipment and materials is provided for all potential incidents
- Signs show who to contact in the event of an emergency

7.11 Treating Your Wastes On-Site

You may wish to treat your wastes on-site before dispatching for disposal. There can be advantages for performing the treatment yourselves such as:

- Reduced treatment costs as you will be able to purchase the chemicals and use your own labour
- Reduced liability from a transport perspective as you will be dispatching a less hazardous waste from your premises.

Remember – if you do elect to treat your own wastes make sure that you have the appropriate infrastructure, facilities and trained personnel to ensure that the treatment process is carried out without risk to personnel or the environment.



TIP!

If your waste contractor is treating wastes on your behalf carry out a spot check from time to time to see if they are treating the waste as required and that they are doing so in a safe manner.

7.12 Material Safety Data Sheets (MSDSs)

It is your responsibility in terms of the Hazardous Chemical Substances Regulations of 1995 to have MSDSs for all hazardous substances used on-site. These MSDSs must be used to inform personnel how to: handle, store and dispose of chemicals safely.

This also applies to hazardous wastes generated and stored on-site. The MSDSs must also be provided to the contractors who will be transporting, treating and disposing of your hazardous wastes. It is your responsibility as the generator of the wastes, to ensure that those who may store, handle (including treat, reuse and recycle) and dispose of your wastes are informed of the associated hazards. This will assist in ensuring that your wastes are safely handled, stored and disposed when removed from your premises.

It is also important to remember that your MSDSs must be accessible to all employees and not stored in an office away from where the HCS are being used.

7.13 Out Sourcing Your On Site Waste Management Function

If you are a big organisation generating large volumes of waste, it may be worthwhile outsourcing your waste management activities. The benefits of using contractors who are experts in this field include:

- Identification of potential income streams from recyclable products
- Provision of trained employees who can maximise the efficiency of source separation of recyclable or re-usable waste products
- Improved supervision of the waste management function
- Provision of specialised equipment such as waste sorting tables and balers
- Overall increase in waste minimisation and increase in recyclable revenue stream coupled with a decrease in waste to landfill

- Monitoring and recording systems, including the provision of monthly reports and statistics to assist with the setting of targets and objectives
- One waste contractor providing an integrated streamlined service

7.14 RESPONSIBLE CONTAINER MANAGEMENT

All containers that previously held hazardous chemicals are classified as hazardous throughout their life cycle. This means that you need to set up a system to manage these containers to prevent them being reused by unauthorised personnel.

If you use a chemical in your process and the containers are taken by your employees or contractors to use for storage at home, consider the potential consequences of the containers being:

- Used to store food or water – causing harm such as poisoning from toxins, cancer from carcinogens, etc.
- Used to make a braai?
- Exploding due to flammable residues in the drum when using a cutting torch or grinder?
- Used to store other chemicals and potentially causing a fire, toxic fumes or explosion due to incompatible mixtures of chemicals.

In South Africa we have a tragic situation where chemical containers are being stolen and sold for reuse, usually for food and water in the rural areas. There is no guarantee that the containers are clean and safe for use. Many people have been poisoned and even died from this practise.

For more information please refer to the Responsible Container Association Website at http://www.rcmasa.org.za.

What's best practice for container management?

Apply the Waste Hierarchy.

(As discussed in Chapter 5)

Avoid producing empty containers for disposal

When buying raw materials, what about seeing if you can include in the contract a requirement that the supplier takes back the empty container?

Minimise the amount of empty containers that you generate

Use the largest container size possible to minimise the numbers that you use. Where feasible, consider bulk systems. For example, if you get your raw material in bags, consider deliveries in a bulk, reusable container. This can be offloaded into a tank/silo directly or you can make use of conveyers and pipes, where this is not possible.

Treat the empty containers

Where avoidance or minimisation is not possible, establish a system to clean containers before releasing for reuse. Remember that this washing process may cause your effluent constituents to change and possibly become more hazardous as a result. Check that your permit allows for the changes and make sure that you inform the local authority.

Send the empty containers for recycling

Use a reputable company to remove your drums for recycling (refer to Chapter 8, Section 8.9). Make sure you provide MSDS information to the recycler so that they are aware of the hazards associated with the containers. Remember to audit their practises to ensure that they are environmentally responsible and that they comply with the relevant legal requirements.

Final Disposal

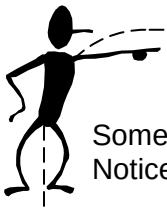
If none of the options is feasible, develop a security system that ensures no containers are removed from site, other than to a reputable contractor for landfilling. It may be a good idea to crush or puncture your containers so that they are not suitable for re-use. Verify that disposal does take place to ensure your containers do not end up in the public domain. The landfill must be secure, waste manifests must be provided and the site must not allow scavenging. An

auditable cradle to grave paper trail must be maintained.

7.15 AUTHORISATIONS

7.15.1 NEMA AUTHORISATIONS

Remember, if you are starting a new activity that is included in those listed in *GNR 386 of 21st April 2006* you 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.*

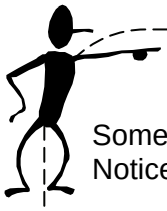
Activity 23(f): The decommissioning of facilities for *the recycling, handling, temporary storage or treatment of general waste with a daily throughput capacity of 20 cubic metres or more.*

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

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

IMPORTANT!

YOU MUST CHECK THE LISTS OF ACTIVITIES BEFORE YOU COMMENCE ANY NEW DEVELOPMENT OR MODIFY / EXPAND YOUR 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*

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

7.15.2 ENVIRONMENT CONSERVATION ACT PERMITS

The *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste* set limits on the time that you can store hazardous waste on your premises. Hazardous waste may only be stored 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 lower the

amount that can be stored without a permit (Note: The toxicity is based on the Hazard Rating: HR which was explained in Chapter 6).

STORE TIME LIMIT FOR HAZARDOUS WASTE

A generator of waste may accumulate the following quantities of hazardous waste on site for 90 days or less:

Hazard Rating 1: 10 kg

Hazard Rating 2: 100 kg

Hazard Rating 3: 1000 kg

Hazard Rating 4: 10 000 kg

If you cannot comply with the storage time limits you 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 you need to apply for an exemption from this requirement.

There may be some instances where storage and accumulation of wastes in a central area at your facility may require a Section 20 permit or an exemption. It is advisable to check with the DEAT in this respect. Ensure that all communications are in writing and that records of responses from DEAT are kept on file.

Annexure Two 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)'*

7.15.3 Local Authority Permits

In some areas there may be requirements in the relevant local authority bylaws that require permits for storage of hazardous substances. An example is the permitting requirements for the storage of flammables in terms of the eThekwini Interim Code Relating to Fire Prevention and Flammable Liquids and Substances PN 5417 of 23 March 2000.

In terms of this code you cannot store in excess of the following volumes of flammable liquids and substances unless you have a Certificate of Registration issued by eThekwini 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 you apply for your permit, develop an inventory of flammable materials stored on-site and do not forget to include your flammable wastes when calculating these figures such as waste oils and solvents.

Remember to include the incidents that may arise from the storage of flammable wastes in your storage areas when developing your Emergency Response Procedure.

REMINDER OF SOME RELEVANT LEGAL REQUIREMENTS!

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

CHAPTER EIGHT: HAZARDOUS WASTE TRANSPORT OFF-SITE

SUMMARY

SOUTH AFRICAN BUREAU OF STANDARDS DOCUMENTS	▫ Many South African National Standards Documents (SANS) dealing with the transportation of dangerous goods (and therefore hazardous wastes) are legally binding and you must be aware of the applicable requirements in these documents
The consignor, operator and consignee	▫ These categories of persons all have numerous responsibilities: ✓ Consignor – person who dispatches the hazardous waste ✓ Operator – person who transports the hazardous waste ✓ Consignee – person who accepts the hazardous waste after transport
What do your responsibilities include?	▫ Identification and classification of wastes and correct packaging ▫ Provision of documentation ▫ Training and appointment of relevant personnel ▫ Auditing your transporter
Documentation and Placarding	▫ As a generator you need to ensure that your waste contractor is using the correct documentation, including: ✓ The dangerous goods declaration and the transport emergency card ✓ You also need to ensure that the vehicle displays the correct placards and front warning diamond
Incidents	▫ Incidents involving the transport of hazardous waste may be reportable in terms of S30 of National Environmental Management Act, S20 of the National Water Act and the National Road Traffic Act and SANS 10232-3
Empty containers	▫ Don't forget about empty containers previously carrying dangerous goods. Be aware of the requirements of SANS 10406

8.1 GENERAL

As discussed briefly in Chapter Two, if you are despatching hazardous wastes from your premises, you need to ensure that it is done in compliance with the National Road Traffic Act of 1996, the National Road Traffic Regulations of 2000 and the associated SANS documents that have been incorporated in to the regulations as legally binding requirements.

It is essential that you purchase copies of the relevant SANS documents so that you are able to identify the requirements applicable to your operations. This can be done electronically on the following website: www.sabs.co.za or at your local South Africa Bureau of Standards offices.

Remember that these documents are updated from time to time so you need to ensure that you kept abreast of new developments.

IMPORTANT!

IF YOU ARE A WASTE GENERATOR THIS CHAPTER IS APPLICABLE TO **YOU** AND **NOT JUST YOUR TRANSPORTER!**!

8.2 WHAT SANS DOCUMENTS DO YOU NEED?

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 you keep copies of the documents marked (*). You may however need other documents depending on the nature of your business practises.

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.

8.3 *WHAT ARE YOUR RESPONSIBILITIES IN TERMS OF THE NATIONAL ROAD TRAFFIC ACT?*

8.3.1 *THE CONSIGNOR*

As a ***consignor*** of hazardous wastes you have 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 *(Remember this was a requirement for waste disposal – now you see that it is necessary to classify your wastes from a transport point of view as well)*;
- 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** *(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)*;
- 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 (*as the waste generator, you therefore have to discuss and agree on this information with your hazardous waste transporter*).

8.3.2 *THE OPERATOR*

The ***operator*** also has a number of responsibilities. Remember that you need to be aware of these from a Duty-of Care perspective.

If you do not check to ensure that your transporter complies with the legal requirements, you could face potential liabilities should there be an incident that causes pollution during the transport of your wastes.

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'.

The following are some compliance issues that you should check (extracted from SANS 10231:2006):

- Is the operator registered with the Department of Transport as a Dangerous Goods Operator and is the operator's card displayed on the vehicle's windscreen?
- Does the operator ensure that the driver has a valid professional driving permit (PrDP-D) for dangerous goods?
- Is the driver trained 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 has had its training material approved – Note: PrDP-D training must*

be done by a Department of Transport approved training provider and TETA (Transport Education Training Authority) approved training provider - training records must be kept with the driver).

- Does the operator provide a route plan to the driver?
- Do they have a procedure to report accidents?
- Does the operator provide safety equipment to the driver in accordance with the information on the transport emergency card?
- Is the driver trained to use the safety equipment with which he has been provided?

IMPORTANT!

Check that your hazardous waste transporter has **insurance cover** 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

8.3.3 LOADING OPERATIONS

Your waste management procedures should cover loading responsibilities as specified in SANS 10231:2006 as these are legal requirements. All loading must be carried out by a ***qualified person*** trained in the relevant procedures. It is recommended that you appoint your dangerous goods loading supervisors in writing.

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)'

Some of the loading requirements are detailed below:

- The vehicle is correctly parked;
- The area is safe and warning signs placed if necessary;
- 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 ***(especially if you are loading something that may react with the residue of a previous 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 ascertained;
- The 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.

8.3.4 THE DANGEROUS GOODS DECLARATION

Your waste contractor should be using 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 again this would be Hazard Class 9 and Packing Group III;
- 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 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!

Note the implications of what you are signing for, both as the generator of the waste and as the consignor of the waste.

Who in your organisation is signing the dangerous goods declarations? Many companies assign this responsibility to the security guard at the gate.

<u>This is a legally binding document and may be used against you in the event of an incident</u>!

8.4 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 your driver is unable to provide information about the load. You need to ensure that your operator is using the correct transport emergency card for each of your hazardous wastes.

The transport emergency card must be generated by either:

- The CEFIC system (European Chemical Industry Council software) or
- In accordance with SANS 10232-4.

VALIDITY OF THE TREMCARD!

Either version of the transport emergency card is only valid for three years from the generation date. This 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).

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.

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".

8.5 *VEHICLE PLACARDS*

As the consignor of the hazardous waste you are responsible for supplying the placards or the information regarding the correct placard to the operator. You therefore need to agree on the correct information with your waste contractor. The format and content of the placard is very specific and is found in SANS 10232-1.

You need to ensure that:

- The UN number used is correct for each waste stream 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 your 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.

8.6 *WASTE CLASSIFICATION REQUIREMENTS*

Here again when dealing with transportation of hazardous waste, the subject of waste classification comes up! (refer back to the table in Section 6.7 for the waste classes). 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.

8.7 *TRANSPORT INCIDENTS*

In order to limit your liability in the event of an incident you need to choose your hazardous waste transporter carefully and ensure that both of you comply 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 National Road Traffic 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'

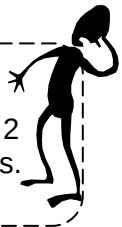
SANS 10232-1
DEFINITION
INCIDENT

'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.

REMINDER!

Refer back to the end of Chapter 2 for incident reporting requirements.



If you send your drums or containers for recycling you need to ensure that they are nominally empty and that you supply a nominally empty certificate ***every time*** the drums / containers are 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!

8.8 EMPTY CONTAINERS

Did you know that in terms of SANS 10232-1, a container used for the transport of dangerous goods that has not been cleaned and is not accompanied with a ***nominally empty packaging certificate,*** is regarded as a dangerous goods waste product?

You must ensure that you are aware of the requirements of SANS 10406 in respect of the reprocessing of ***previously certified packaging.***

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'.

When you audit your drum reconditioning company you should check how they manage drums that cannot be reprocessed. This means that you need to know 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.

8.9 OTHER APPLICABLE LEGISLATION

8.9.1 THE OHSA REGULATIONS

In Chapter 2 various sets of regulations that detailed requirements for the labelling, packaging, transportation and storage of hazardous chemical substances (HCSs), such as asbestos, lead and hazardous biological agents were detailed. These are additional legal requirements of which you should be aware when you are dispatching hazardous waste from your premises.

The wording of the provisions in the HCS, asbestos, lead and hazardous biological agents is very similar – see below for the requirements in terms of the HCS Regs.

HCS REGS

R14 Labelling, packaging, transportation and storage

'An employer shall, in order to avoid the spread of contamination of an HCS, take steps, as far as is reasonably practicable, to ensure (b): that a container or a vehicle in which an HCS is transported, is clearly identified, classified and packed in accordance with SANS 10228 and SANS 10229'

R15 Disposal of hazardous chemical substances

'An employer shall as far as is reasonably practicable
(c) ensure that all vehicles, re-usable containers and covers which have been in contact with HCS waste are cleaned and decontaminated after use in such a way that the vehicles, containers or covers do not cause a hazard inside or outside the premises concerned'

8.9.2 THE INTERIM CODE RELATING TO FIRE PREVENTION AND FLAMMABLE LIQUIDS AND SUBSTANCES

As detailed in Chapter 2, eThekwini Municipality have bylaws dealing with flammable liquids and substances. These also apply to the transport of your flammable wastes. The waste contractor providing this service to you must have a Certificate of Registration for each vehicle that they use for carrying flammable wastes.

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

(Refer back to Chapter 7.14.2 for the definition of the Classes).

CERTIFICATES OF REGISTRATION

If you are despatching flammable wastes from your premises, check that a Certificate of Registration is carried on the vehicle and if what you are despatching complies with the conditions on the certificate.

NOTE!

The requirements may look quite daunting but once you have incorporated them in your management system, it will be easy to comply.

CHAPTER NINE: CRADLE-TO-GRAVE PAPERWORK

SUMMARY

Ensure you have sufficient and adequate paperwork to prove that you and your contractors have managed your wastes in terms of applicable legal requirements	▫ Waste classification – analyses and reports ▫ Recycling, treatment and disposal facility permits and authorisations ▫ Records demonstrating compliance with the National Road Traffic Act ▫ Auditable paper trail from the point at which the waste left the site to the point of final disposal, including transfer, treatment or recycling facilities
Contracts	▫ Reduce the individual responsibilities between you and your waste contractor to a legally binding contract
Audits	▫ Don't take your contractors word when it comes to compliance issues, audit and verify their compliance from time to time

Remember these actions are all about limiting your potential liability should things go wrong!

9.1 GENERAL

By now you should be fully aware that as a generator you are always liable for your wastes from the point of generation to the final point of disposal, including any recycling or treatment phases that the waste may go through. But what does this actually mean to you in practice? Basically, it means that in every step of the waste management chain:

- you need to be aware of the legal requirements,
- you and your waste contractors need to comply with the legal requirements and finally
- you need to have documented evidence that covers all the above.

9.2 WASTE CLASSIFICATION

Make sure that you have identified your wastes and classified them correctly. Keep copies of all relevant paperwork for each waste stream including:

- Relevant MSDSs
- Laboratory analyses
- Waste classification reports
- Communications with your waste contractor regarding the waste classification issues relating to each waste stream
- Delisting authorisations

9.3 RECYCLING, TREATMENT AND DISPOSAL FACILITIES PERMITS

If you send your wastes to recycling or treatment facilities, you need to check that they have the required authorisations.

9.3.1 ENVIRONMENTAL AUTHORISATIONS

As detailed in 7.15.1, you need to ensure that the facility has the required:

- Record of Decision (if established / expanded post September 1997 in terms of the Environmental Impact Assessment Regulations under the Environment Conservation Act) or
- Environmental Authorisation (if established / expanded post July 2006 in terms of the Environmental Impact Assessment Regulations under the National Environmental Management Act)

You should also check that they are complying with their conditions of authorisation.

9.3.2 SECTION 20 ECA PERMITS

Section 20 permits are issued in terms of the Environment Conservation Act. These permits used to be issued by DWAF but are now issued by DEAT.

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 Section 20 permit or an exemption (See Annexure Three for 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*).

The above 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.

You need to therefore ensure that any facility that you send your waste to has the relevant permit or exemption.

IMPORTANT!

You need to obtain copies of facility permits / authorisations / exemptions and keep them on file.

It is important to be aware of any conditions attached to the permits that might be relevant to you, for example - what waste is the facility permitted to handle? Are there wastes specified that they are not allowed to handle?

9.3.3 LOCAL AUTHORITY PERMITS / AUTHORISATIONS

Check that the facility that your waste is going to has other permits in terms of the bylaws in the area. If these facilities are in the eThekwini Municipality, you should be requesting copies of:

- Scheduled Trade Permits in terms of the Scheduled Trade Bylaws.
- Trade Effluent Discharge Permits in terms of the Sewage Disposal Bylaws (if the disposal site discharges leachate to sewer or if the recycling / treatment facilities discharge any effluent to sewer).
- Certificates of Registration in terms of the Interim Fire Code (if the facilities store flammable liquids and substances in excess of the storage limits in the bylaws).
- Planning permissions (if required).

All of these permits contain conditions of authorisation and thus you must obtain copies of the permits and keep them on file.

HINT!

If the facility that you use has a Trade Effluent Discharge Permit ask to see the latest copy of their Regulatory Monitoring Report. This will give you an idea of their permit compliance status and will also state whether any compliance notices (for contraventions) have been issued against the company.

9.4 TRANSPORTATION REQUIREMENTS

9.4.1 THE NATIONAL ROAD TRAFFIC ACT

As detailed in Chapter 8, there are numerous requirements that you need to comply with when dispatching hazardous waste from your premises. You should draw up a check-list for when you dispatch your hazardous waste from site and the appointed dangerous goods loading supervisor should complete these checklists to ensure that you have documentary proof that you complied with all the requirements.

If you dispatch numerous loads off-site, you need to weigh up your potential liability against the feasibility of completing checklists for every load and make an informed decision as to how often you should complete checklists. This decision should take into account how hazardous the waste is that you are sending off-site onto the roads and your associated potential liabilities.

IMPORTANT!

(1) Keep a copy of your hazardous waste transporters insurance cover on file. Make sure you periodically check its validity.

(2) Check that the waste manifest / consignment note / delivery note that your contractors uses for the removal of hazardous waste comply with the requirements of the Dangerous Goods Declaration (Refer back to Chapter 8)

9.4.2 LOCAL AUTHORITY PERMITS / AUTHORISATIONS

Check that the transporter that you use is authorised as a waste contractor if applicable in terms of the bylaws in the area. If you are in the eThekwini Municipality, you should request a written confirmation that your waste contractor is approved in terms of the Refuse Removal Bylaws.

Note: This approval will state what wastes the contractor is allowed to handle.

9.5 Paperwork Relating to Loads Removed From Site

9.5.1 Auditable Paper Trail

You need to ensure that you have an auditable paper trail that can prove that you can track your wastes from the point of removal from your premises to the point of disposal. Remember that if you are using an intermediate waste contractor (one that does not own their own landfill site) you will need to follow the paper trail and check if your wastes are taken to their yard first before being taken to the final disposal point. They need to be able to demonstrate to you that they have a system in place that enables your wastes to be tracked.

9.5.2 Wastes Going Directly To Landfill

From a paperwork point of view, a 'best practice waste manifest' is one that has a place for the following:

- Your signature (before the waste leaves your premises)
- The driver's signature (when he accepts the waste for removal from your premises)
- A signature from the landfill site where the waste is received and a reference number unique to the load in question (such as a weighbridge entry number)

What should happen is that when the waste leaves your site, you should keep a copy of the waste manifest bearing your signature and the driver's signature (manifest copy 1).

When the waste is disposed at the landfill site, the waste contractor should send you back another copy of the waste manifest, this time bearing the signature from the landfill site and a reference number allocated to the load (manifest copy 2). Thus you have a document that bears all three signatures, providing an auditable paper trail. You should to take this a step further and 'marry' manifest copy 1 with manifest copy 2, thereby checking that all the loads that left your site were safely disposed of

Note: Often the manifest copy 2 is sent to the accounts Department with the invoice for the load. <u>It is therefore important that you retrieve this document for your records</u>.

If you use an intermediate waste contractor and they do not use the above system, encourage them to do so. If they do not use a manifest with three signatures, ask for a copy of a weighbridge slip or other proof of delivery to the landfill site.

9.5.3 Wastes Going To Landfill Via Another Facility

Sometimes your waste contractor might take your waste to their own premises before they are taken to the landfill site for disposal. This may be due to the fact that they treat the waste before it goes to landfill. In this instance, you need to ensure that the waste contractor has a system to demonstrate a mass balance of waste received, wastes treated, waste discharged to sewer, waste sent for recycling and wastes sent for landfilling (as applicable).

For example: Your waste contractor may take oily wastes from your premises to his yard. At his yard he may:

- Separate the oil from the water
- Send the water to sewer
- Send the oil to an oil recycler
- Dispose of contaminated sand residue to landfill

Another reason that the waste may be taken to the waste contractors yard is that they may be storing the wastes (like drums of oily rags) until they have a bigger consignment to take to the landfill site. In this instance, you need to ensure that they have a system to reconcile what was taken to their yard and what was sent to the landfill site for disposal. When you visit them, they must be able to

track the fate of all your individual loads of waste.

9.5.4 *WASTES GOING TO A TREATMENT FACILITY*

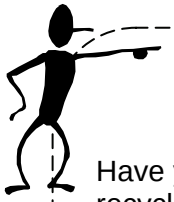
You may be sending your wastes off-site to treatment facilities, for example your health care risk wastes (medical waste). See if you can make the 'three signatures manifest' mandatory. Keep copies of these manifests on file in the same manner as for other wastes.

Don't forget to follow up on what happens to the residue of the treated waste. For example:

- Is a classification done on the treated residue? Get a copy.
- Where is the treated residue sent and does the facility have a permit to accept these wastes? Get a copy.

9.5.5 *WASTES GOING TO A RECYCLING FACILITY*

Don't forget about paperwork that deals with your wastes sent for recycling. Make sure that you obtain the relevant documentation from the waste contractor to prove that your waste was received by the recycling facility. Again, a waste manifest with three signatures would be first prize, otherwise insist on confirmatory paperwork from the recycler themselves.



CONSIDER THIS!

Have you ever checked on the recycler of your products? You may think that all the wastes are being recycled, when in actual fact, some of it is being re-directed to landfill!

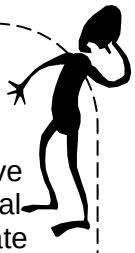
Meet with your contractors to discuss the issue and resolve any potential problems.

9.5.6 *WHAT ABOUT THE SAFE DISPOSAL CERTIFICATE?*

Some companies like to have safe disposal certificates on file. This practise has traditionally come about from auditors and government officials asking for proof that wastes have been disposed of in a legally compliance manner.

Safe Disposal Certificates do have their place as they can provide you with a useful monthly summary of the wastes that you have disposed to landfill, but they should not replace your reconciled waste manifests bearing the signatures of the generator, the transporter and the disposal / treatment / recycling facility.

Unfortunately there are some waste contractors that generate 'Safe Disposal Certificates' which merely state what the waste was and where it went. There are no references to weighbridge numbers or receipt numbers issued by the receiving facility and this makes auditing the system very difficult.



BEWARE!

eThekwini Water and Sanitation have come across numerous safe disposal certificates generated by Intermediate Waste Contractors, where the certificates detail that the waste has been taken to either one of the two hazardous waste landfill sites in the Durban area.

When the officials checked with the landfill site operators they had never heard of the waste contractor before! Where did the waste go to? Where does that leave the generator?

VERIFY THE INFORMATION ON YOUR SAFE DISPOSAL CERTIFICATES!

9.6 CONTRACTS

Just like in a marriage, it is important to have a written contract with each of your waste contractors. Apart from the financial aspects, the contract needs to plainly spell out the roles and responsibilities of each party, including the procedure that must be followed when an incident occurs. The contract needs to be signed and dated by both parties and should be regularly reviewed. This will help you in addressing your Duty of Care requirements in terms of the National Environmental Management Act.

Remember you need to include clauses in your contract that your contractor will comply with the requirements of the Hazard Chemical Substances Regs, the Asbestos Regs, the Lead Regs and the Hazardous Biological Agents Regs as briefly discussed in Chapter 2.

9.7 AUDITS

Don't forget to include auditing in your Duty of Care and Cradle-to-Grave Responsibilities. You need to audit your waste contractors to ensure that they are complying with the legislation pertaining to waste. This includes:

- Pollution prevention responsibilities
- Transportation requirements
- Permit requirements
- Training, etc.

Keep copies of your audit reports on file as this demonstrates that you have taken reasonable steps to assess the legal compliance status and environmental performance of your contractors. If you have any concerns about their operations communicate with them in writing and see how they respond. If you have serious concerns and the contractor does not make a genuine attempt to resolve the issues, it may be worth your while to look at alternative contractors.

Remember, it is all about limiting your liability.

CHAPTER 10

WASTE MANAGEMENT POLICIES AND PROCEDURES

CHAPTER TEN: WASTE MANAGEMENT POLICIES AND PROCEDURES

SUMMARY

Develop waste management policies, procedures and work instructions	▫ Policy statement of commitment ▫ Roles and responsibilities ▫ Terminology ▫ Procedure(s) detailing how you are going to manage your waste ▫ Records ▫ Relevant legislation
Develop waste management plans	▫ How you are going to address shortcomings identified in your systems? ▫ What objectives and targets are you going to introduce?
Audits	▫ Internal audits of your own waste management systems ▫ External audits of your waste contractors
Benefits of auditing	▫ Improvements in efficiency of waste handling ▫ Improvements in efficiency of waste minimisation ▫ Reduction in waste costs ▫ Sustainable use of renewable or non-renewable resources ▫ Verification of legal compliance

10.1 GENERAL

In order to manage your wastes and achieve compliance with legal requirements, you should draw up a waste management policy and procedures or work instructions. This will enable all employees to understand their responsibilities in addressing waste management issues.

10.2 STATEMENTS OF COMMITMENT

You should incorporate statements of commitment in your policy document.

Some examples of commitment statements are:

- Comply with all applicable legislation and associated regulations with respect to waste management
- Conduct waste audits to identify, document and classify all wastes generated in our operations
- Incorporate waste minimisation practices of source reduction, good housekeeping, substitution of products, hazard segregation, re-use, recycling, and treatment into all waste generating activities and operating procedures
- Only use disposal when other options are not technically, or economically feasible, environmentally sound, or not legally compliant
- Designate on-site storage facilities for the intermediate storage of waste, and maintain these facilities in such a manner that they do not impact on the health and safety of employees or on the surrounding environment
- Set waste reduction targets annually and maintain waste records to assess actual performance against agreed targets
- Address our cradle-to-grave responsibilities by evaluating and monitoring all waste management service providers to ensure their compliance with applicable legislation
- Maintain auditable waste management documentation.

10.3 PROCEDURE CONTENT

You can incorporate any information that is relevant to your operations in your waste management procedure. To get you started these are the types of headings that are recommended to ensure that you address all your waste related requirements.

Content

A brief description of what the procedure covers.

Responsibility

Details of who holds responsibility for which aspects of the waste procedure.

Terminology

A list of terminology and respective explanations to assist those employees who are unfamiliar with technical jargon.

Procedure

The procedure should address a number of issues such as:

- Waste identification and classification (Analytical requirements, frequency of testing and classification)
- Application of the waste hierarchy
- Waste storage arrangements
- Management procedures for each waste stream
- Cradle-to-grave documentation
- Required permits
- Waste contractors compliance and auditing of waste contractors (including waste recycling / treatment / disposal facilities)
- Training and awareness

Records

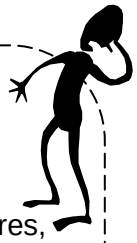
A list of records, who will keep them and for how long. For example:

- Waste inventory
- Process flow charts
- Waste classification reports
- Delisting approvals

- Waste contracts
- Waste contractors permits
- Waste contractor audits
- Reconciled waste manifests / dangerous goods declarations / weighbridge dockets / safe disposal certificates
- Invoices
- Summary spreadsheets
- Internal waste audits
- etc.

Legislation

If you do not have a Legal Register, then your procedure should reference the relevant legal requirements.



BEWARE!

Make sure that you involve the employees in drawing up procedures, work instructions and management plans. If you don't you will not have buy in to the system and the process will not be sustainable.

Ensure your employees are trained and understand their roles and responsibilities. There should be ongoing awareness programmes.

10.4 WASTE MANAGEMENT PLANS

Your waste management policy and procedure may link to a waste management plan. This plan should be developed to address shortcomings that you have identified in assessing your company's waste management systems. Some examples are:

- Improvement in waste management storage arrangements
- Permit application requirements
- Development of procedures to assess waste contractors performance
- Investigating waste reduction and minimisation opportunities

Remember in setting your plan to identify clear objectives and measurable targets so that you are able to evaluate your performance and provide a systematic basis for continual improvement.

HINT!

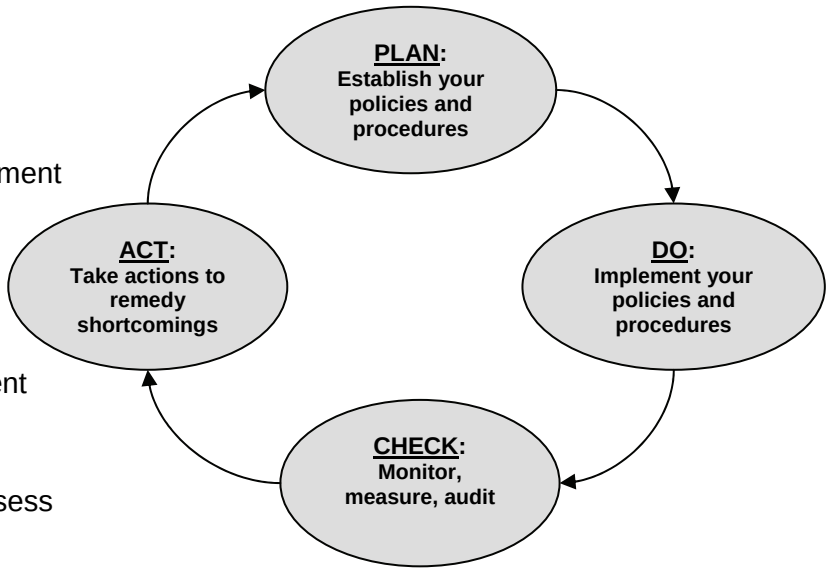
Don't forget to link the amount of waste that you produce to the quantity of your finished products. You may be wondering why your wastes show an upward trend, but this may purely be as a result of increased production.

Don't forget to take into consideration special circumstances such as plant shut-downs and expansions.

10.5 AUDITS

10.5.1 CONTINUAL IMPROVEMENT

Any environmental management system (which includes your waste management policy and procedure) should be based on the cornerstone of continual improvement. This is illustrated by the Plan-Do-Check-Act cycle illustrated below:



Auditing is a process of checking to see if what was planned (as set out in policies and procedures) is actually being done (workplace practices). Auditing is vital to track your performance, progress and compliance status and is a component of the CHECK aspect of continual improvement.

The potential benefits of waste auditing include:

- Improvements in efficiency of waste handling
- Improvements in efficiency of waste minimisation
- Reduction in waste costs
- Sustainable use of renewable or non-renewable resources
- Verification of legal compliance

AUDIT OBJECTIVES

These may vary according to the waste types and sites to be audited and may include:

- Determining the types and quantities of wastes generated
- Measuring the effectiveness of the waste management system
- Evaluating compliance with internal procedures
- Identifying opportunities for improvement
- Collecting data for measuring the effectiveness of waste minimisation programmes
- Evaluating legal compliance

10.5.2 AUDITING METHODOLOGY

An audit consists of a number of steps.

(1) Audit Scope and Objectives

Define the extent of the audit and what criteria are going to be used to assess performance. Define the objectives of the audit process.

(2) Plan the Audit

Obtain the necessary reference documents, background information and schedule the date and time of the audit. Develop your audit protocol which may be a checklist detailing the questions that you are going to ask and a list of the relevant records that you want to see. This will streamline the audit process.

Your audit protocol can be as simple or as complex as you require. Checklists can also be a useful method of scoring your audit results so that performance can be tracked, and you can establish if the waste management programme is working as planned. Waste management should not be considered separate from production issues and waste indicators should be part of your business performance scorecard.

Examples of checklist questions include:

Item	Yes	No	N/A	Comment
Are waste containers in good condition?				
Are waste containers labelled?				
Are waste storage areas isolated from storm water drains?				
Are incompatible wastes stored separately?				
Are flammable wastes stored correctly?				
Have all hazardous waste streams been classified?				

You can use the information presented in this guide to develop your waste management procedures and plans and to compile your audit checklists.

(3) Audit Opening Meeting

Hold a short opening meeting with relevant employees responsible for the waste management function. The purpose of this meeting is to inform the company representatives of the scope and objectives of the audit.

(4) On Site Audit

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

- Inspections of the facilities
- Review of monitoring records
- Review of training records
- Interviewing employees – always ensure that you verify their response by looking for evidence
- Observing employees carrying out their duties

It is useful to take photos during the audit so that you can present visual evidence in your audit report.

IMPORTANT!

All team members should be trained to audit and understand the protocol to be used. Ensure support from those working in the areas to be audited, by notifying them of how, when and why the audit will take place. Remember, that the carrot works better than the stick. Notice and report any positive behaviour and practices, as much (if not more!) as examples of poor waste management. Take photos illustrating both the good and the bad.

Reassure employees that the audit is about teamwork and finding opportunities for improvement. Commitment from all the role players is essential for ensuring the success of an audit, as the findings and recommendations are more likely to be considered and implemented. Include relevant employees in your audit team.

(5) Audit Closing Meeting

Hold a short closing meeting with relevant employees to give them preliminary feedback relating to the audit. They therefore have some idea of how the audit went before the final audit report is prepared.

(6) Post Audit Review

Analyse the documentation that you have obtained during the audit process. Ensure that you have sufficient information to compile your report and request additional information if necessary.

(7) Audit Report

Consolidate the work that you have done during the audit in a written audit report where you present your findings and recommendations for improvement.

(8) Audit Follow Up

Follow up on your audit findings and recommendations for improvement to ensure that the responsible parties have implemented corrective actions and that these actions have been demonstrated effective.

Remember:

Don't audit your own work – make sure that the person appointed to audit is independent to ensure objectivity.

10.5.3 eTHEKWINI WASTE AUDITS

The eThekwini Municipality permitting process for Scheduled Trade and Trade Effluent permits for industry in the Municipality states that a waste audit is undertaken annually. This audit requires an assessment and report on the following matters:

- Identification of all waste types
- Condition of all sand, oil and grease traps
- For each waste stream:
  - Composition and constituents
  - Anticipated volumes
  - Classification
  - Methods of storing and handling on- and off-site
  - Identification of opportunities for minimisation and improved housekeeping
  - Use of waste/by-products from others in production
  - On-site waste treatment
  - Final disposal site
  - Record keeping and waste tracking

Ensure your inspection and audit programme includes these aspects as a minimum. Improvements in waste management practises need to be documented in the organisation's 5-year Environmental Improvement Programme.

10.5.4 AUDITING YOUR WASTE CONTRACTORS

(1) Landfill Sites and Treatment Facilities

Not everyone is a subject authority when it comes to waste issues and therefore you might find auditing your waste contractors a bit intimidating.

If you are auditing a landfill or treatment facility for compliance with their Section 20 Environment Conservation Act (ECA) permit, it is useful to know that landfill sites and treatment facilities are required to be audited by an external auditor. The frequency of these audits is defined in the facility permit. Ask your waste contractor for a copy of their most recent external audit. This will give you a good idea of how they are complying with their permit conditions. If there are non-compliances ask for their action plans in resolving these issues and verify that these actions have been carried out. Do a walk around their facility to see for yourself how effective the environmental controls are.

You can also check that they are complying with their:

- Scheduled Trade Permit
- Trade Effluent Discharge Permit
- The Certificate of Registration for storage of flammable substances (if applicable)
- Town Planning Permission (if applicable)

Also ask for a copy of their registration as a waste contractor in terms of the eThekwini Refuse Removal Bylaws.

Don't forget to address health and safety aspects relating to the landfill site or treatment facilities. Some questions that you can ask are:

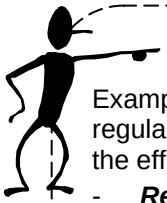
- Have risk assessments been carried out and safe working procedures introduced?
- What training is done?
- What medical surveillance programme is implemented on-site?
- Have any occupational diseases been reported to the Department of Labour?
- What personal monitoring has been carried out to assess the exposure of staff to hazardous chemicals in the waste?
- What training do the drivers that transport hazardous waste receive?
- What Approved Inspection Authority Reports have been commissioned (such as for noise, hazardous chemical substances, etc.).

See what findings and recommendations were made in any assessments conducted and check if these have been implemented.

(2) Recyclers

Recycling facilities should have a Section 20 permit in terms of the (ECA) or an exemption there from. If their permit or exemption does not include a requirement for an external audit, ask for a copy of their permit and then audit them for compliance against their permit conditions.

Also check for compliance against their Scheduled Trade Permit which is a requirement for all waste operations. If they carry out any processes that discharge effluent to sewer, check that they have a valid Trade Effluent Discharge Permit and that they comply with the conditions. If they deal with flammable wastes check that they have a Certificate of Registration for storage of flammable substances (if applicable). Check if they have Town Planning Permission (if required). Also ask for a copy of their registration as a waste contractor in terms of the eThekwini Refuse Removal Bylaws. The same health and safety questions for the landfill and treatment facilities can be asked.



IMPORTANT!

Examples of waste contractors to be audited regularly to minimise risk to your business and the effect of illegal waste disposal include:

- ***Recyclers***: eg. oil, plastic, paper, metal, wood
- ***Treatment Facilities***: incinerators; health care risk waste treatment facilities
- ***Disposal***: landfill sites
- ***Transporters***: To and from any of the above facilities

CHAPTER ELEVEN: SELECTING YOUR WASTE CONTRACTOR

SUMMARY

Do your homework!	▫ Remember the Polluter Pays and Duty of Care Principles ▫ Do not use cost as your guiding principle!
Contract	▫ Enter into a legally binding contract
Selection process	▫ Develop a terms of reference ▫ Check the waste contractor's credentials ▫ What extra services do they offer?
Contract and project wastes	▫ Do not forget about controls for your contractors and project wastes
Performance checks	▫ Verify the compliance of your contractor both on and off site
Service level agreements	▫ Develop service level agreements with your contractors – you then have an objective way to evaluate their compliance status with respect to your waste management programme

11.1 GENERAL

Remember the Duty of Care and Polluter Pays principles when selecting your waste contractors – DO YOUR HOMEWORK. This means you need to know (and verify) how your wastes are transported from your facility as well as how they are stored, handled and discarded to the environment thereafter.

Carefully choosing and managing your contractors to ensure they are environmentally responsible and legally compliant can save you time and money in the long run. For example:

- If there is an accident during transport the generator (consignor) can be one of the parties held responsible
- If the landfill site or recycling facility or treatment plant pollutes the environment and it can be traced back to you as the generator there is the potential that you may be liable

THE WASTE PRODUCERS OMEN!

IF IT SOUNDS TOO GOOD TO BE TRUE, IT PROBABLY IS!

11.2 THE SELECTION PROCESS

There is never a single process that results in you wanting to choose a new waste contractor. It may arise from:

- A project resulting in new processes, products or capacity in your operations
- An opportunity to reuse, recycle or treat your waste stream that was previously landfilled
- A problem requiring resolution
- A pollution incident requiring containment, clean up and rehabilitation
- An existing contract expiring

11.2.1 WHERE TO START?

It is important to understand the aim and objectives that you want to achieve with your waste management contract and thus your waste contractor. Use these objectives to develop a written scope of work or terms of reference for the work you want your contractor to undertake such as:

- Set out the legal framework and compliance requirements
- Set targets with achievable outcomes and include these in a service level agreement
- Clarify roles, responsibilities and reporting structures
- Establish the documentation trail to be used – what reports are going to be provided?
- Detail the responsibilities for incident response – who, how, timeframes?
- Spell out clearly, in the event of an emergency, who reports to whom and how?
- Specify insurance cover requirements

Ensure that the outcome of your selection process culminates in a written contract.

11.2.2 CHECK YOUR WASTE CONTRACTOR'S CREDENTIALS

Here are some questions that you can ask potential contractors:

- Are they registered with the local authority as a waste contractor? (if this is a requirement of the bylaws for your local authority area)
- For contractors removing hazardous waste –
  - Are their vehicles registered as a Dangerous Goods Carriers with the Department of Transport?
  - Do they have environmental impairment insurance? Ask for a copy of their cover.
  - Do they use trained drivers?
  - Are their vehicles fitted with placards and other signage?

- Do their vehicles have Certificates of Registration for flammable waste? (if this is a requirement for your local authority area)
- Do they use compliant Waste Manifests / Dangerous Goods Declarations? Ask for a copy to verify contents of the document
- What training are their employees given with respect to hazardous waste?
- What medical surveillance program are their employees under? Have they ever had to report an occupational disease to the Department of Labour?

- Are the landfill sites, recycling facilities, or treatment facilities where they take your wastes permitted? Ask for copies of these permits and check the permit conditions and the permit validity. These are permits issued in terms of Section 20 permits of the Environment Conservation Act (ECA) or exemptions there from.
- Do the landfill sites, recycling, or treatment facilities where your wastes are taken have Scheduled Trade Permits, Trade Effluent Discharge Permits and Town Planning permission if applicable to your area? Ask for copies of these permits and check the permit conditions and the permit validity.
- What type of paperwork are they going to provide you with to prove that they have dealt with your waste in a legally compliant manner? This is especially important if they are taking your wastes to a facility where it will be treated and part of the waste will go to landfill, part will go to a recycler and part will go to sewer. Do they have mass balance controls to demonstrate to you how they can track your waste stream?
- Ask them if they have ever received any non-compliance notices from the authorities and if so, ask for copies.
- Are they ISO 14 001 certified? If they are not, do they have a programme to implement ISO 14 001 and what are their anticipated timeframes?
- Are they OHSAS 18 001 certified / do they have a NOSA rating? If they do not have a safety management system in place, do they have a programme to implement and what are their anticipated timeframes?

Make sure that you ask for this information in writing so that they provide written responses. In addition, don't take your contractor's word – AUDIT them for compliance!

11.2.3 Additional Services To Look For

Ask your waste contractor what additional services they can offer you such as:

- Assistance and advice with respect to waste classification
- Assistance with waste reduction and recycling opportunities
- Specialised service offerings based on the nature of each waste stream such as special containers, compactors, balers, colour coded containers, etc.
- Supply of drum labels for hazardous chemical waste – compliant with SANS 10229 requirements
- Collated and comprehensive paperwork presented in a monthly report

11.2.4 Making The Decision

Use the above information to assist with your decision making process. Don't base the end result purely on price. Weigh up your potential liabilities based on the outcome of your research.

11.3 Contract And Project Wastes

Most companies leave out waste management requirements related to contractor and project wastes such as:

- Construction projects and associated wastes
- Wastes generated by suppliers

It is important to use the waste hierarchy for project and contract wastes and look for opportunities to avoid or minimise any waste produced. You should include the following in the scope of work for project contractors:

- Supervisor responsible for waste management
- Waste management training and awareness provided for all personnel
- Housekeeping and littering prevention focus
- Development of a waste inventory
- Classification of waste streams
- Strategy for managing hazardous wastes
- Requirements for containers – sizes, types, frequency of emptying
- Auditable trail for wastes generated and removed from site
- Waste inspections and audits

11.4 PERFORMANCE CHECKS

Your contractors' performance needs to be reviewed to determine if they are achieving the objectives of the contract for which they have been retained. Develop a checklist from your contract.

Desk top evaluation

Check the paper trail is in order to achieve legal compliance and meet your cradle-to-grave requirements

Walk about

Do on-site visits to verify that work practises are performed according to procedures. Speak to employees to see if they understand how to work safely with your wastes and know how to respond to incidents to minimise environmental damage. Use a camera to capture the status quo at the inspections. Photos can be used to show trends with time. Generate reports to record your findings and agree on action plans and timeframes to resolve any issues identified. Include your photos in the report, as it makes the report more informative. Record your findings in a way that is easy to understand and allows the waste contractor to resolve the issues.

For example, do not use:

- × Waste area untidy
- × Employees not working safely

Rather be specific

- Containers overfilled
- Waste dumped next to skip
- Employees not using personal protective equipment

TIP!

Audits and Inspections

Remember that the carrot usually works better than the stick. Always look for example of ***good practises and behaviour***. Highlight these in your reports and make a point of commending people for doing the "right" thing whenever you see it. If you only record the problems, they may be hidden for the duration of your next visit.

Encourage reporting and separate it from the disciplinary procedure. Reporting of incidents should be a method of ***preventing a recurrence***, and not a way to punish the wrongdoer.

Don't forget to refer back to the section on auditing in Chapter 10.

11.5 SERVICE LEVEL AGREEMENTS

It is a good idea to include Service Level Agreements (SLAs) in your contract with your waste services supplier. SLAs set targets for your contractors responsible for handling, minimising, storing, transporting, treating and disposing of your wastes in terms of the inputs and outputs:

Outputs

Outputs are what you want to achieve with your waste management program.

Inputs

Inputs are what actions must be taken to achieve the outputs.

An example of some outputs and inputs in a waste SLA are given below. The terms and contents of the SLA need to be negotiated with your selected waste contractor. Think about including incentives and penalties.

CLAUSE NO	*OUTPUT SPECIFICATION*	*INPUT SPECIFICATION*
ON-SITE MANAGEMENT		
1.1	The contractor shall ensure that all 240 ℓ polycart (wheelie bins) containers are colour coded and marked to maximise separation efficiencies at source.	The 240 ℓ polycarts must be colour coded as follows: - Orange – General - Blue – Paper and cardboard - White – Canteen – food waste - Black – Glass The polycarts must be labelled with both words and pictures depicting the correct usage of the container. The contractor must implement an employee training and awareness program on-site. This program will be repeated as the need arises (such as when non-conformances are identified during site inspections).
1.2	The contractor shall ensure that sufficient 240 ℓ polycart containers are provided in all the areas to prevent waste overflow and littering.	240 ℓ polycart containers will be placed at the following locations: - Canteen - 4 x white polycarts - 1 x black - Office complex - 4 x orange - 2 x blue - 1 x black - Production line 1 - 1 x orange - 2 x blue The on-site supervisor must carry out a daily inspection of all waste areas to ensure: - Proper polycart bin usage (waste stream separation) - The specified number of polycarts are available - The polycarts are emptied at the required frequency
1.3	All containers must be maintained in good condition and must be kept hygienic at all times.	All polycarts must be fitted with plastic liners to maintain them in a clean and hygienic condition. The on-site supervisor shall do a weekly check of all polycart containers and shall identify containers requiring repair and / or cleaning. Findings shall be rectified within one week.

The SLA should cover all aspects of the management program (depending on the extent of your contract) such as:

- On site management
- Waste management area
- Recycling targets
- Waste classification
- Removal of waste from site
- Waste disposal / recycling / treatment
- Invoicing
- Reports and records

ABBREVIATIONS & ACRONYMS

Acceptable Exposure	The concentration of a substance that will have a minimal effect on the environment or human health
AE	Acceptable Exposure
Acceptable Risk Level	The concentration of a substance that will have a minimal effect on the environment
APPA	Atmospheric Pollution Prevention Act, 45 of 1965
ARL	Acceptable Risk Level
Asbestos Regs	Asbestos Regulations of 2001 promulgated in terms of the OHSAct
ECA	Environment Conservation Act 73 of 1989
Carcinogens	A substance or agent producing or inciting cancer. These substances can be grouped as: Class A – carcinogenic to humans, Class B (a) – probably carcinogenic to humans, Class B (b) – possibly carcinogenic to humans, Class C and D – probably not a carcinogen or not classifiable as carcinogenic to humans.
Catchment Management Agency	An agency established to manage water resources in a specific catchment area.
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 – '*The Identification and Classification of Dangerous Goods for Transport*').
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
EMS	Environmental Management System
eWASA	Electronic Waste Association of South Africa
EWS	eThekwini Water and Sanitation
Extended Producer Responsibility	Instead of the producer being responsible for pollution prevention during for example a manufacturing process, this responsibility is extended to include the management of the product once it has been discarded.
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
Leachate	An aqueous solution with a high pollution potential, arising when water is permitted to percolate through decomposing waste. It contains final and intermediate products of decomposition, various solutes and waste residues
Lead Regs	Lead Regulations of 2001 promulgated in terms of the OHSAct
MSDS	Material Safety Data Sheet

Mutagens	Agents causing genetic mutations. A substance is considered mutagenic when it is significantly positive in at least 3 different in vitro/in vivo assays.
NEMA	National Environmental Management Act 107 of 1998
NRTA	National Road Traffic Act 93 of 1996
NWA	National Water Act 36 of 1998
NWMS	The National Waste Management Strategy
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
SLA	Service Level Agreements
Sterilise	Make free from micro-organisms.
TCLP	Toxicity Characteristic Leaching Procedure
Teratogens	These are substances, which have the capacity to cause birth defects.

TETA	Transport Education Training Authority
Total Load Capacity	The capacity of a landfill site to accept a certain substance or the amount of a substance, which can be safely disposed of at a certain site. The total load capacity is influenced by the concentration levels and mobility of the waste, and by the landfill practice and design.
Trade Effluent Bylaws	Durban Transitional Metropolitan Council Sewage Disposal Bylaws MN 27 of 13th 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.

1. An Introduction to Pollution Prevention: Training Manual, 1995. Prepared by Hagler Bailly Consulting, Inc. An Environmental Pollution Prevention Project.
2. Guidelines for Preparing Waste Assessments: A Practical Guide Towards Cleaner Production, 1994. Environment Protection Authority, Victoria. Publication 277.
3. Waste Minimisation: An Environmental Good Practice Guide for Industry, 2001. UK Environment Agency (www.environment-agency.gov.uk)
4. How to Prevent Waste and Emissions from your Company – A Self-help Guide, 1998. Clean Technology Centre, Cork Council, Ireland.
5. Environmental Auditing, Integrated Environmental Management, Information Series 14, 2004. Department of Environmental Affairs and Tourism (DEAT) Pretoria.
6. 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.
7. Waste Management – Reduce, Reuse, Recycle. North West Environmental Management Series 4, 2005. North West Provincial Government.
8. Websites for legislation: www.polity.co.za , www.actsonline.co.za , www.info.gov.za
9. Department of Labour documentation, reporting and guidelines: www.labour.gov.za
10. Website for DWAF: www.dwaf.gov.za
11. Website for DEAT: www.environment.gov.za

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)

---

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 cander 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 ait 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 0f 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
Class A: Any friable ACW	Raw asbestos (e.g. asbestos damaged in transit or no longer required). Bags previously used to transport raw asbestos (that have not been melted into a solid mass). Asbestos insulation, limpet spray of pipe lagging removed from power stations, buildings, boilers or pipe works. Pure asbestos rope or textiles
Class 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.	Dry swarf or cutting dust from the asbestos cement or friction material production process. Used filter bags from dust extraction units at the workplace. Asbestos cement that has unavoidably been crumbled, pulverised, or reduced to powder during demolition operations. Disposal equipment and clothing contaminated with asbestos.
Class C: Any Class B ACW that has been adequately wetted or otherwise encapsulated such that it will not release fibres into the air	Wet swarf or cutting dust from the asbestos-cement or friction material production process. Sludge, slurry or wet waste from the production proces. Bags previously used to transport asbestos that have been melted into a solid mass in an autoclave.
Class D: 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.	Asbestos cement sheets or pipes. Off cuts of asbestos-cement sheets or pipes. Disused friction products such as gaskets, brake pads or clutch plates

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 that 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 that 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, tremilite, actinilite and anthophylite. 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 (µm) and a diameter less than 3 µm." 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 iths oringin 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 Waster 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 agend, amended water (water to which surfactant chemicals have been added, such as a 50:50 mixture of polyoxyethylene ester and polyoxyethylyne 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 pollozanic 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 ashcerete 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 that the trench widthe and length.

6.3.2 Co-disposal Sites

The Department requires all waste to be treated in order to minise the risk to human health and the environment. All classes of ACW can be so treted 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 this 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 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 "adequa tely 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 suc h as pipes and boards should be kept wet as a precautionary measure at all times before disposal at the site. Class D wstes should be trasported 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 la yer 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 al 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 wing, 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 cover with a layer of compacted waste that it at least 3 metres in depth.

- A monitoring programme for staff required by the Occupational Health and Safety Act should be implemented. This requires and 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". 2nd 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", 2nd 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)

WM/10077106/KR

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[1] 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 2nd 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).

[1] 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

TASK	***RESPONSIBILITY***
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.

Version 1/19 June 2000

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 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^+". 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 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)

---

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 cander 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 ait 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 0f 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
Class A: Any friable ACW	Raw asbestos (e.g. asbestos damaged in transit or no longer required). Bags previously used to transport raw asbestos (that have not been melted into a solid mass). Asbestos insulation, limpet spray of pipe lagging removed from power stations, buildings, boilers or pipe works. Pure asbestos rope or textiles
Class 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.	Dry swarf or cutting dust from the asbestos cement or friction material production process. Used filter bags from dust extraction units at the workplace. Asbestos cement that has unavoidably been crumbled, pulverised, or reduced to powder during demolition operations. Disposal equipment and clothing contaminated with asbestos.
Class C: Any Class B ACW that has been adequately wetted or otherwise encapsulated such that it will not release fibres into the air	Wet swarf or cutting dust from the asbestos-cement or friction material production process. Sludge, slurry or wet waste from the production proces. Bags previously used to transport asbestos that have been melted into a solid mass in an autoclave.
Class D: 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.	Asbestos cement sheets or pipes. Off cuts of asbestos-cement sheets or pipes. Disused friction products such as gaskets, brake pads or clutch plates

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 that 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 that 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, tremilite, actinilite and anthophylite. 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 (µm) and a diameter less than 3 µm." 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 iths oringin 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 Waster 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 agend, amended water (water to which surfactant chemicals have been added, such as a 50:50 mixture of polyoxyethylene ester and polyoxyethylyne 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 pollozanic 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 ashcerete 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 that the trench widthe and length.

6.3.2 Co-disposal Sites

The Department requires all waste to be treated in order to minise the risk to human health and the environment. All classes of ACW can be so treted 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 this 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 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 "adequa tely 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 suc h as pipes and boards should be kept wet as a precautionary measure at all times before disposal at the site. Class D wstes should be trasported 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 la yer 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 al 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 wing, 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 cover with a layer of compacted waste that it at least 3 metres in depth.

- A monitoring programme for staff required by the Occupational Health and Safety Act should be implemented. This requires and 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". 2nd 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", 2nd 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)

WM/10077106/KR

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[1] 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 2nd 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).

[1] 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

TASK	***RESPONSIBILITY***
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.

Version 1/19 June 2000

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 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^+". 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.