



## **AGRICULTURE, CONSERVATION ENVIRONMENT & LAND AFFAIRS**

# **SUSTAINABLE HEALTH CARE WASTE MANAGEMENT FOR GAUTENG**

**Mark's Park, Johannesburg  
25 September 2002**

**Stakeholder Consultation on the (i) Guidelines and (ii) the  
Feasibility Study for Sustainable Health Care Risk Waste  
Management in Gauteng**

### **Workshop Proceedings**

**HOSTED BY  
THE GAUTENG DEPARTMENT OF AGRICULTURE, CONSERVATION, ENVIRONMENT  
AND LAND AFFAIRS.**

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# **GAUTENG DEPARTMENT OF AGRICULTURE, CONSERVATION, ENVIRONMENT AND LAND AFFAIRS**

**Stakeholder Workshop on the (i) Guidelines and (ii) Feasibility Study on Sustainable Health Care Risk Waste Management in Gauteng held on Wednesday 25 September 2002, at Marks Park, Johannesburg**

## **EXECUTIVE SUMMARY**

The purpose of the project on Sustainable Health Care Waste Management (HCWM) in Gauteng is to ensure that Health Care Waste (HCW) generated is not detrimental to people's health or the environment once disposed of. HCW management standards need to be improved from the point of generation of the HCW to final treatment and disposal. Improvement comes at a cost and the project has been proactive in identifying the main cost drivers of Health Care Risk Waste (HCRW) and areas where cost savings can be achieved.

The project will provide information to the national Department of Environmental Affairs and Tourism and this will be disseminated to the other provinces where applicable and also to the national HCRW project that will be starting in 2003.

The purpose of the workshop was to communicate progress to stakeholders, evaluate the draft HCWM Guidelines and Feasibility Study and also to obtain input and comments from stakeholders.

### **▪ Pilot projects**

Pilot projects are being conducted at the Leratong Hospital and the Itireleng Clinic, both of which are situated on the West Rand. Preliminary findings of a survey conducted showed that major breakdowns in the management control systems occurred in the following areas:

- The regular supply of liners and containers;
- The usage of protective equipment;
- The enforcement of standards
- No cohesive system for the overall management of HCW;
- Transport methods need to be improved;
- There is a lack of training in HCW management;
- The segregation of waste is poorly carried out in all areas;
- There is low morale and job performance amongst health care workers.

### **▪ Progress on the HCW management project**

- Testing of the 660-litre and 770-litre wheelie bins as well as a set of reusable plastic box containers was under way;
- The reusable plastic containers seem to be the most cost effective of the alternative containers, although not significantly so.

### **▪ Preliminary findings of the HCW generation and composition study**

- An average 24% of waste in HCRW containers was found to be Health Care General Waste (HCGW);
- An average of 0.1% of sharps was found to be deposited in the incorrect containers;
- A problem exists at the source of HCW generation with the mis-segregation of waste and the misuse of containers.

▪ **Draft Health Care Waste Management Guidelines**

It was envisaged that the Guidelines would be presented in a ring binder so that the relevant modules can be passed on to the person responsible for that aspect of HCWM. Work must still be done on the wording and layout of the Guidelines. Information is divided into different modules as follows:

- Module 1: General Introduction
- Module 2: How to organise a Health Care Waste Management System
- Module 3: HCW Generation, Segregation and Containerisation
- Module 4: Internal Transport and Storage
- Module 5: Transport of Health Care Risk Waste and Residues
- Module 6: Treatment of Health Care Risk Waste
- Module 7: Disposal of HCRW Residues

▪ **Stakeholder comments and input**

The main issues that were raised by stakeholders during the breakaway sessions included:

- The Guidelines presently focus mainly of large HCRW generators - buy-in from smaller facilities is also needed;
- Multi-disciplinary training in HCWM is needed at all staff levels
- There should be a link between waste generators, transporters and treatment service providers so that their different requirements are known;
- Resources for registration, monitoring and reporting need to be put in place;
- Emissions monitoring and standards need to be included in the Guidelines;
- Transport vehicles should be fitted with a tracking system and spillage kit;
- Treatment sites should have the ability to hold some HCRW in cold storage;
- Poverty alleviation through recycling should be considered;
- One comprehensive set of HCW legislation for the whole country is needed;
- Maceration and disposal of anatomical waste to the sewer should not be allowed.

## 1. OPENING AND INTRODUCTION:

Dr. Trish Hanekom welcomed everyone present and thanked them for attending. She called on the Gauteng MEC for Health, Ms Ramagopa to open the proceedings.

MEC Ramagopa from Department of Health (DoH) thanked MEC Metcalfe from Department of Agriculture, Conservation, Environment and Land Affairs (DACEL) for the invitation and also extended her appreciation to everyone involved in the project as well as in the implementation process. The involvement of various stakeholders such as the Danish government, representatives from various national provincial and local authorities, industry, non-governmental organisations and other institutions like the SABS and CSIR was also acknowledged.

The World Summit on Sustainable Development (WSSD) was still fresh in everyone's minds with its emphasis on striving for sustainable development in a complementary way. The Summit reaffirmed that people, the planet and prosperity are all linked. Health care was highlighted as an important component of sustainable development as it impacts significantly on everyone.

The purpose of the project on Sustainable Health Care Waste Management (HCW) in Gauteng is aimed at ensuring that HCW generated is not detrimental to people's health once disposed of. There is also a move towards improving HCW Management standards from the point of generation, through all its phases, to treatment and ultimately its disposal. This improvement inevitably comes at a cost, which cannot be absorbed by the receiver of the health care service. The project has been mindful of this dilemma and has been proactive in identifying the main cost drivers of Health Care Risk Waste (HCRW) management.

The project aims at reducing the risks of HCRW both at the point of generation, as well as when managed off site. Public health care facilities produce about 50% of all HCRW generated in Gauteng and therefore can influence the HCRW industry through positive HCRW management.

The work undertaken to improve the tendering process and performance criteria for outsourcing of HCW management is only part of the process. Buy-in is also needed from health care workers and managers of health care institutions for the project to be truly sustainable. There is also a need for continuous reinforcement of the principles of effective waste segregation at source and service providers will be required to assist in this area.

The Gauteng Provincial Government recognised the need for transparency and consultation in order for the project to succeed. Input made during this workshop will be used to build on progress made since the previous workshop held in November 2001. Since the previous workshop public and media outcry over poor management of HCRW has diminished, but it is still the responsibility of all stakeholders to ensure sustainable development for the sake of the

MEC Ramagopa then called on MEC Metcalfe to introduce the project.

MEC Metcalfe added a word of welcome to all present and extended thanks to MEC Ramagopa and other key stakeholders for finding the time in their already busy schedules to attend the workshop. The process had come a long way. The present workshop was for the purpose of reviewing and consolidating past work and looking at the work that lies ahead.

The first workshop in May 2000 was held against the backdrop of media headlines highlighting the shortcomings in HCRW management. These provided impetus to the process. In November 2001 a workshop was held to discuss the draft Health Care Risk Waste Management Policy that had been developed for Gauteng. This draft Policy, which was endorsed by the Gauteng Cabinet, provided the framework and also set the time frame for the closure of non-compliant facilities by 1 January 2004.

Substantial progress has been made since then:

- Gauteng province has sufficient compliant HCRW treatment capacity to treat all the HCRW generated in the province;

DACEL can ensure that only compliant HCRW treatment facilities will be permitted to treat HCRW in the province;

- The protocol for HCRW treatment requirements for non-burn technologies that was set in the draft Policy has been developed into a document and is being implemented in Gauteng;
- A waste composition study has been undertaken to determine the amount of waste that is entering the HCRW stream that can be disposed of as part of the domestic waste stream. This study is of importance, as it will direct the work to be done in the training component of the project. Improved segregation of waste will reduce both the volume of HCRW as well as the risk to health care workers. This is pioneering work - no such study has been undertaken in South Africa before.
- The HCW Information System (HCWIS) has been developed and is also being pioneered at two pilot institutions. MEC Metcalfe extended thanks to HCRW transporters and treatment facilities who have volunteered to provide information for use during the HCWIS pilot study. This voluntary reporting will make the transition to legislated reporting easier.
- The current discussions will focus on the work done to date at the two pilot institutions, Leratong Hospital in Krugersdorp and Itireleng Clinic in Dobsonville. The draft Guidelines for the handling of HCRW will also be discussed with the objective of moving towards sustainable management of HCRW.
- The outcome of the workshop on the Guidelines will be supported by action plans and the legislation process. Time frames are being put in place, with 1 January 2004 being the deadline for decommissioning of non-compliant HCRW treatment technology.

Although there have been major achievements, there is still much work to be done. Progress was made possible through partnerships. Ms Metcalfe acknowledged and thanked the Gauteng DoH and MEC Ramagopa for their partnership and input. Other key contributors acknowledged were:

- The Danish government for financial assistance, consultative design process, strategic planning, the development of sustainable project partnerships and for providing valuable expertise;
- The HCRW Management Industry for the time, knowledge and practical experience that they have contributed;
- The Project Steering Committee (PSC) members drawn from Department of Environmental Affairs and Tourism (DEAT), Department of Water Affairs and Forestry (DWAF), national and provincial Department of Health (DoH), Gauteng Department of Public Transport Roads and Works, Gauteng Association for Local Authorities (GALA), Health Care Institutions, Infection Control Institutions, Non-Governmental Organisations (NGO's) and Labour for their valuable input;
- Civil Society and stakeholders for their attendance at workshops, input made and feedback given on documents circulated for comments.

The project is important, as it will provide information to the national DEAT, which will be disseminated to the other provinces where applicable and to the national project HCRW management that is due to start early next year. Work on the hazardous waste management strategy for Gauteng will also start next year and lessons learned from the present project and experience gained will help to ensure that this waste stream is also managed in a sustainable manner.

Dr Hanekom thanked the MEC's for taking the time to attend the opening of the workshop and indicated that the involvement of two provincial departments would ensure that the objectives of the project are realisable.

The purpose of the workshop was therefore to communicate progress to stakeholders, evaluate the draft HCWM Guidelines and Feasibility Study and also obtain input and comments from stakeholders.

Dr Hanekom called on Dr Dhiraj Rama to give a brief background to the project.

## 1. BACKGROUND OF THE PROJECT

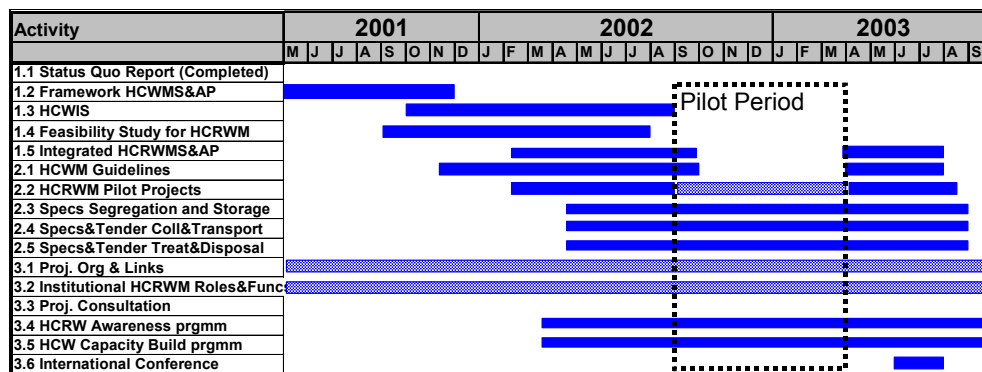
The project was initiated in response to HCW problems experienced in the past e.g. illegal and undesirable disposal of untreated or poorly treated HCRW.

- The Project Design was initiated in 2000;
- DACEL published a Status Quo Study in November 2000;
- The current project commenced on 1 May 2002 and has been extended by 5 months until 30 September 2003;
- The Project Steering Committee (PSC) has had the participation of DEAT, NDoH, GDoH, Gauteng Department of Public Works, GALA, NGOs, DACEL and the Danish Embassy;
- The Project Management Group included representatives of the GDoH, Public Works, GALA and DACEL.

### Summary of Implementation Plan

The timeframes for implementation of the project are summarised in the following figure:

**Figure 1: Timeframes for implementation of the project**



### Progress and Key Outputs

Produced:	In the making:
<ul style="list-style-type: none"> <li>▪ HCWM Policy</li> <li>▪ Draft Feasibility Study</li> <li>▪ Draft HCWM Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>▪ HCW Composition Study</li> <li>▪ Technical Specifications for HCWM</li> <li>▪ Tender Documents for HCWM</li> </ul>
<ul style="list-style-type: none"> <li>▪ Non-burn Verification Protocol</li> <li>▪ Study Tour Report</li> <li>▪ Draft Capacity Building Report (Pilots and Province)</li> <li>▪ HCWIS Protocol</li> <li>▪ Cost of compliance monitoring (Incineration)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Finalisation of the Capacity Building &amp; Awareness Plan</li> <li>▪ HCWM Strategy &amp; Action Plans</li> <li>▪ Cost of compliance monitoring (Non-burn)</li> <li>▪ Web page for HCW (made public)</li> </ul>

Dr Rama called on Ms Nobantu Mpela to report back on the pilot projects at the Leratong Hospital and Itireleng Clinic.

## **2. PRESENTATION OF PROPOSED PILOT ACTIVITIES AT LERATONG HOSPITAL AND ITIRELENG CLINIC**

Ms Mpela explained that both the Leratong Hospital and the Itireleng Clinic are situated on the West Rand.

### **Key design criteria for both pilot projects have included the following:**

- A safer HCRW management system;
- The system must be environmentally friendly;
- It must be affordable to the DoH; and
- The DoH should have sufficient capacity to sustain the system.

### **Process followed:**

- Waste management committees were set up involving staff from all levels;
- Problem analyses were conducted;
- A survey was conducted to establish the status quo and obtain information to inform the decision making process;
- Focus groups were conducted to identify performance gaps;
- Regular workshops and meetings were conducted.

### **Summary of Survey Report**

The survey showed that Leratong Hospital has a workable waste management system of containers and liners that are provided. However, major breakdowns occur in the management control systems in the following areas:

- The regular supply of liners and containers;
- The usage of protective equipment;
- The enforcement of standards - colour coding etc.;
- Hardware - containers etc. must be supported by adequate software - management system.

### **Management system - software**

- Documented procedures are available in some cases;
- The management of waste is haphazard and there is no cohesive system in place for the overall management of HCW;
- No formal identification of needs and issue of protective equipment occurs;
- Very little formal monitoring, evaluation and enforcement takes place;
- The Occupational Health and Safety committee does not have a high enough profile.

### **Equipment - hardware**

- Equipment is of poor quality and is ill equipped;
- There is no standardisation and no specifications are available;
- Stock levels are allowed to drop low, which leads to improvisation and deviations from colour coding;
- Transporting methodologies need improving;
- Better provision of protective clothing is needed.



### **Management, training and awareness**

- Multidisciplinary team work, including doctors and administration staff, is needed;
- Opportunities for multidisciplinary training are needed;
- There is scope for a positive feedback and merit system;
- In-service training should be extended through service providers and
- Current knowledge levels should be extended and improved upon.

### **Critical area for improvement**

The segregation of waste needs to be improved upon in the following areas:

- Segregation is poorly carried out in all areas;
- Improvements in the regular provision of colour coded equipment and liners is needed;
- Standardisation and labelling of containers is required;
- Positioning of containers in some areas is necessary;
- The lack of a management system is a major factor in poor segregation - roles, responsibilities, supervision and enforcement are needed;
- Low morale and job performance amongst health workers contributes to poor segregation.

## **3. GENERAL PRESENTATION ON PROGRESS WITH THE HCW MANAGEMENT PROJECT**

Mr Torben Kristiansen of RAMBØLL reported on the progress made with the HCW project and proposed HCW tender process.

### **Recommended Pilot Project**

- Testing of two "best options" were recommended:
  - Testing of the 660-litre or 770-litre wheelie bins as well as a set of reusable plastic box containers in different departments at Leratong Hospital;
  - Testing of the same set of reusable plastic box containers throughout Itireleng Clinic
- Recommended 660-litre or 770-litre wheelie bin system:
  - Smaller bags used on nursing trolleys for HCRW collection are to be sealed and placed in a wall mounted rack or bag holder with a large red plastic bag, positioned in the sluice;
  - Sealed large bags are collected from the sluice and placed inside the 660-litre or 770-litre wheelie bin together with sealed sharps containers etc.;
  - Positive aspect: Easy and safe transport, environmentally friendly and cheaper;
  - Negative aspect: Re-introduction of plastic liners may be seen as a step backwards and is a potential safety concern if segregation is not improved.
- Recommended reusable plastic box system:
  - HCRW is placed in the final puncture proof container at source and never exposed again until emptied at the HCRW treatment facility;
  - Positive aspect: Addresses all needle stick injury concerns, is environmentally friendly and the cheapest option;
  - Negative aspect: Manual handling of numerous items is involved and requires a trolley or pallet system for transporting.

### **Estimated monthly cost scenario**

- Based on the outcome of the Feasibility Study, the reusable plastic containers seem to be the most cost effective of the alternative containers, although not significantly cheaper than the others (see Tables 4 and 5 on page 17).

- The preliminary budget for the pilots is presented in Table 1 below.

### Recommended capacity building at the pilots

- A dedicated HCW officer and assistant;
- Knowledge training;
- Skills coaching;
- Awareness activities;
- Trained Occupational Health & Safety committee for HCW monitoring and reporting;
- Print materials;
- Code of practice booklet;
- External audit by a regional Environmental Health Officer.

**Table 1: Preliminary pilot study budget for HCRW (24 Weeks)**

<b>Preliminary Pilot Budget for HCRW (24 Weeks)</b>				
<b>Estimated Fixed Costs</b>	<b>240 Wheelie Bin</b>	<b>770 Wheelie Bin</b>	<b>Dual Wheelie Bin System</b>	<b>Dual Wheelie/boxes</b>
Re-usable Containers	96,130	110,600	94,700	114,908
Equipment	38,086	38,086	44,160	40,814
Bin lifter/Washer, central storage	153,000	188,000	188,000	188,000
<b>SUB TOTAL</b>	<b>287,216</b>	<b>336,686</b>	<b>326,860</b>	<b>343,722</b>
<b>Estimated Recurring Costs</b>	<b>240 Wheelie Bin</b>	<b>770 Wheelie Bin</b>	<b>Dual Wheelie Bin System</b>	<b>Dual Wheelie/boxes</b>
Disposable Containers	60,708	60,708	60,708	55,728
Liners	42,900	60,172	59,851	55,047
<b>SUB TOTAL</b>	<b>103,608</b>	<b>120,880</b>	<b>120,559</b>	<b>110,775</b>
<b>TOTAL</b>	<b>390,824</b>	<b>457,566</b>	<b>447,419</b>	<b>454,497</b>

Gauteng Department of Agriculture, Conservation, Environment and Land Affairs

### Critical assumptions

- New tender specifications would be implemented as part of the new HCRW management tender by approximately September 2003 and the current system and contracts would be extended by approximately 6 months;
- The availability of a cleaning and disinfection facility for reusable containers off site;
- Mechanical lifting devices would be installed on trucks and at the treatment plant for minimum manual handling;
- Commitment from all parties (DoH, Health Care Facilities, Transporters, Treatment Plant) to maintain and deliver required inputs during pilot studies and until the new HCW management system is implemented as part of the new tender (Pilot Project Agreement), including the supply of consumables.

## 4. PRELIMINARY FINDINGS OF THE HCW GENERATION AND COMPOSITION STUDY

Mr Sydney Nkosi presented the preliminary findings of the HCW Generation and Composition Study. The study had been undertaken to provide an estimate of the extent to which HCW is incorrectly segregated and to gain insight into the composition of HCW. This information is to aid in the design of a system for improved HCW segregation.

- On average 24% of waste in HCRW containers was found to be HCGW;
- An average of 0.1% of sharps were found to be deposited in the incorrect containers, which poses a serious risk to health care workers;
- It is evident that there is a problem at source - the mis-segregation of waste and the misuse of containers;
- Specicans were only weighed, but not opened.

### Methodology

- Random sampling took place based on expected daily population (consecutive numbers and pre-determined numbers for the day);
- 10 of each type of container were sampled daily according to the following table:

**Table 2: Sample size for HCW generation and composition study.**

Container type	No of samples to be taken per day (12 days)		
	Leratong Hospital	Treatment Facility	
		Public Health Facility	Private Health Facility
5 L Sharps	10	10	10
10 L Sharps:	10	10	10
25 L Sharps	10	10	10
10 L Specican	10	10	10
50 L Cardboard box	10	10	10
140 L Cardboard box	10	10	10
General waste bags	10		

### Results

- **Contents of the 140 litre cardboard boxes:**
  - Average mass 10.63 kg per box (relatively high compared to other generators);
  - 24% of mass is Health Care General Waste (HCGW) (86.7% of samples average 2.03 kg);
  - 0.5% of mass is chemical waste (5.8% of samples average 0.63 kg);
  - 1.2% of mass is clothing (14.2% of samples average 0.60 kg);
  - 0.5% of mass is food waste (2.5% of samples average 1.11 kg);
  - 0.1% of mass is sharps (5.0% of samples average 0.20 kg).
- **Contents of the 10 litre sharps containers:**
  - Average mass 4.15 kg per container;
  - 12.1% of mass is non-sharp HCRW 926.8% of samples average 1.17 kg);
  - 0.1% of mass is HCGW (1.4% of samples average 0.14 kg);
  - 2.0% of mass is chemical waste (9.9% of samples average 0.56 kg).
- **Contents of pathological waste (Specicans):**
  - Average mass 6.24 kg (10 litre) per specican;
  - Average mass 5.08 kg (25 litre) per specican.
- **Contents of the black general waste bags:**
  - Average mass 5.83 kg per black bag;
  - 27.6% by mass (62.5% of samples) is food waste (average 1.77kg);
  - 4.4% by mass (25% of samples) is HCRW (average 0.64kg);
  - 0.7% by mass (3.3% of samples) is clothing (average 0.9 kg);
  - 0.1% by mass (0.8% of samples) is chemical waste (average 0.29kg).

## 5. TENDER DEVELOPMENT FOR PROVINCIAL HCRW MANAGEMENT SERVICES

Mr Sydney Nkosi reported that the tender development process still needs to be refined and improved.

### Preliminary Recommendations

- A separate tender for supplying disposable containers for Gauteng (e.g. the same for all Institutions) is recommended;
- Collection and transport of HCRW should be separate from treatment and split according to the three DoH regions;
- Contracts for HCRW treatment and disposal (e.g. for one or more regions). Back-up agreements with other treatment at facilities should be in place;
- Longer contract periods: 5 years, or 3 years with the option to extend to 5 years;
- Tenders for (primarily) reusable container systems only;
- Emphasis on performance monitoring, penalties, sureties (performance bond);
- There should be emphasis on Contractors' training and HCWM support to each health care facility.

## 6. DRAFT HEALTH CARE WASTE MANAGEMENT GUIDELINES FOR GAUTENG

Mr Torben Kristiansen reported on progress made in developing the HCW management guidelines for Gauteng. He stressed that the copy of the Guidelines circulated to stakeholders prior to the meeting was not a final document. Work must still be done on the wording and layout, and input was needed from the workshop to address needs on the ground.

It is envisaged that the Guidelines will be presented in a ring binder so that only the relevant modules can be passed on to the person involved in a particular component of the HCW management cycle. The Guidelines will be relevant to both public and private health care facilities. Input on the correct terminology is needed where it differs from public to private health care facilities, whilst any remaining gaps are to be identified.

### Background

- HCRW presents an infection risk;
- HCRW sharps may cause injuries including abrasions to the skin;
- Chemicals and pharmaceuticals pose a health and environmental risk;
- Treatment of HCRW impacts on the atmosphere or other areas;
- Pathological waste needs to be controlled;
- Untreated / treated HCRW disposed of at landfills generates leachate that can pollute surface and groundwater.

### Good reasons for improving HCW management standards in Gauteng

- Achieving better value for money by improving on HCW management standards;
- Cost savings for HCW management through more efficient and effective systems;
- Improving occupational health and safety conditions;
- Protecting the health and safety of patients, visitors and staff;
- Improved environmental protection;
- Compliance with legislative requirements;
- Improving the morale of the staff at health care facilities;

- Improving the service delivery of service providers.

**Table 3: Structure of Guidelines and Target Groups**

MODULE	CONTENT	MAIN TARGET GROUPS
Module 1	General introduction to the Guidelines, including: <ul style="list-style-type: none"> <li>• Overview of other modules</li> <li>• Readers guide</li> <li>• Definition of waste categories</li> <li>• Basic data and cost estimates</li> <li>• Overview of legislation</li> <li>• List references, abbreviations &amp; glossary.</li> </ul>	All.
Module 2	Recommendations on how to organise an improved HCW management system. Issues related to decision makers at HCF's.	Senior managers and other managers at HCF's, managers at service providers, as well as Environmental and Occupational Health and Safety Officers at HCF's.
Module 3	Recommendations on how to reduce the HCW generation, as well as improve HCW segregation and containerisation.	Managers and supervisors at HCF's with duties related to HCW segregation and HCW Management in general.
Module 4	Recommendations on the internal collection, transport and storage of HCW.	Managers and supervisors with duties concerning internal waste handling, as well as Environmental and Occupational Health and Safety Officers at HCF's.
Module 5	Recommendations on the collection and transport of HCRW for treatment and transport of residues to landfills.	Managers and supervisors responsible for transport of waste, typically service providers.
Module 6	Recommendations on various options available for treatment of HCRW with emphasis on environmental aspects.	Managers and supervisor at treatment facilities as well as managers and environmental officers at HCF's.
Module 7	Recommendations on proper handling of HCGW and treated HCRW residues at landfills with emphasis on environmental aspects.	Managers and supervisor at landfill as well as managers and environmental officers at HCF's.

### **Module 1 : General Introduction**

- Objectives of Guidelines;
- Readers guide;
- Definitions and basic data;
- Regulation related HCWM;
- How much does it cost?

### **Module 2 : How to organise a health care waste management system**

- Organising a Steering Group;
- Developing a HCWM plan;
- Organising a HCWM team;
- Conducting an audit process;
- Tender procedures;
- Developing a training programme.

### **Module 3 : HCW generation, segregation and containerisation**

- Waste reduction, reuse and recycling;
- Waste segregation;
- Registration;
- Labelling;
- Examples of containers;
- Guiding prices.

#### **Module 4 : Internal transport and storage**

- Collection;
- Intermediate storage;
- Internal transport;
- Central storage;
- Examples of transport equipment.

#### **Module 5 : Transport of Health Care Risk Waste and Residues**

- Loading and unloading health care risk waste;
- External transport;
- Loading and unloading residues;
- Examples of transport equipment.

#### **Module 6 : Treatment of Health Care Risk Waste**

- Health Care Waste Information System;
- Presentation of different treatment technologies;
- Advantages and disadvantages;
- Examples of treatment technologies;
- Environmental standards.

#### **Module 7 : Disposal of HCRW Residues**

- Environmental risks of landfilling;
- What can be disposed of?
- Landfilling of treated Health Care Risk Waste residues.

### **7. FEASIBILITY STUDY FOR HCW MANAGEMENT IN GAUTENG**

Mr Kristiansen reported that the purpose of the Feasibility Study included:

- To inform decision making for pilot project activities;
- To inform decision making on technical specifications and tender documents;
- To inform detailing of policy in the Integrated Strategy and Action Plans for HCWM.

The feasibility study will be made available to other provinces who can then adapt the information to suit their own particular needs.

#### **Scope of Feasibility Study Report**

- Determine and describe suitable HCW management scenarios for Gauteng based on HCW management Policy and Status Quo Study;
- Assess feasibility of various scenarios: i) Environmentally, ii) Financially, iii) Institutionally / socially, iv) Safety, v) Legal / Ownership;
- Recommend the most appropriate future HCW management scenarios;
- Provide decision-making tools for HCW management pilot projects, Technical Specifications and Strategy.

#### **Preliminary findings of the Feasibility Study**

- Reusable containers cause significantly less emissions to the atmosphere than the present disposable cardboard containers;
- Dioxins are significantly lower in non-burn than in burn treatment technologies. Only the transport vehicles are a source of dioxins when transporting larger residue volumes from non-burn treatment technologies than from burn treatment technologies;

- Non burn treatment technologies impact more on global warming because of greenhouse gases produced after landfilling of residues;
- Both technologies have environmental impacts - the impacts are just in different areas.

## 8. SCENARIO COST MODEL: HEALTH CARE RISK WASTE

Mr John Clements, who is a consultant, presented the cost model.

Reasons for building a cost scenario model included:

- A model allows cost-evaluation and cost comparison of many different scenarios;
- A model facilitates the identification of major "cost-drivers". This in turn facilitates the development of new scenarios and the improving or refining of existing ones;
- A cost model is not antagonistic to the occupational or environmental aspects of a system;
- A good model allows the testing of the effect of possible errors in the underlying assumptions and/or dramatic increases in the component costs.

### Weaknesses of a model:

- A model can never be a complete picture of the real world;
- The assumptions on which the model is based may be inaccurate or even erroneous;
- Only major components are modelled.

### HCRW Scenario Cost Model:

The main components included in the model were:

- HCRW containerisation - types and sizes of containers used;
- Treatment scenario - type, number and location of treatment facilities;
- Subsidiary components:
  - Type, capacity and number of trucks;
  - Sterilisation equipment used.

The total expected monthly costs for the different scenarios for the management of all HCRW generated in Gauteng is presented in Table 4, whilst the cost for treatment of HCRW generated in provincial health care facilities only is presented in Table 5:

**Table 4: Total monthly scenario costs (Rm) - All Gauteng HCRW**

Total monthly scenario costs (R m) - All Gauteng HCRW								
No. of facilities	Cardboard boxes		240L Wheelie bins		770L wheelie bins		Re-usable plastic containers	
	Autoclave	Incinerator	Autoclave	Incinerator	Autoclave	Incinerator	Autoclave	Incinerator
1	4.00	4.10	3.80	3.89	3.76	3.85	3.69	3.78
3	4.39	4.48	4.10	4.18	4.07	4.15	3.99	4.07
10	5.69	5.82	5.24	5.35	5.23	5.35	5.14	5.26
20	7.27	7.59	6.66	6.97	6.68	6.98	6.58	6.88
Estimated monthly notional 'status quo' cost: R4.9m								

**Table 5: Total monthly scenarios costs (Rm) - HCRW from provincial facilities only**

Total monthly scenario costs (R m) - Provincial facilities only								
No. of facilities	Cardboard boxes		240L Wheelie bins		770L wheelie bins		Re-usable plastic containers	
	Autoclave	Incinerator	Autoclave	Incinerator	Autoclave	Incinerator	Autoclave	Incinerator
1	2.09	2.12	1.99	2.02	2.01	2.03	1.93	1.95
3	2.45	2.50	2.30	2.34	2.31	2.36	2.23	2.28
10	3.62	3.77	3.35	3.49	3.38	3.52	3.29	3.43
20	5.43	5.50	4.74	5.08	4.78	5.12	4.68	5.03
Estimated monthly notional 'status quo' cost: R2.4m								

**Significance of model results:**

**Containerisation:**

- The reusable plastic containers offer the lowest cost solution. This holds true for all HCRW generated in Gauteng as well as for provincial HCRW only;
- The cost advantage of reusable plastic containers over 240-litre and 770-litre wheelie bins is small, particularly in the case of provincial HCRW only;
- If the trucks transporting wheelie bins have one floor layer as opposed to two layers, the wheelie bin scenario costs increases by up to 10% due to the poor payload achieved.

**Treatment technology:**

- Autoclaving offers the lowest cost treatment solutions irrespective of the number of treatment facilities. This holds true for all HCRW generated in Gauteng as well as provincial HCRW only;
- Incineration is only marginally more expensive than autoclaving, particularly when the number of treatment facilities is 10 or less;
- Microwave treatment is in all cases more expensive than autoclaving, but is marginally cheaper than incineration when the number of facilities is more than 10 (all HCRW generated in Gauteng) and when the number of facilities is more than 5 (provincial HCRW only).

**Number of treatment facilities:**

- In all instances, the fewer the number of treatment facilities, the lower the cost due to economies of scale;
- Even if costs of transport to the regional treatment facilities are doubled, the overall scenario costs reduce as the number of facilities reduces, which supports the concept of regionalisation;
- This scenario does not take into account 'cartel-type' pricing policies which would counter the natural "economies of scale" effect.

**9. COMMENTS ON ALL THE PRESENTATIONS**

- Q. There was a query regarding involvement of organised labour in the present HCW management development process.
- A. Ms Yawitch replied that trade organisations and environmental NGOs were included on the Steering Committee.
- Q. There was a query as to the effect of changing from cardboard containers to plastic container on jobs?
- A. Ms Yawitch replied that jobs would not reduce in numbers; they would just be created in different sectors of the economy. More, rather than fewer, people would be needed.



- Q. There was a query as to whether poverty alleviation linked with community development in terms of waste management had been taken into consideration.
- A. Mr Kristiansen replied that the present project is focused on Health Care workers. Ms Yawitch pointed out that HCW is dangerous - poor management can lead to deaths and infection, which means a social cost. Good management of HCW leads to a saving in terms of positive health consequences. The focus of the project is how to make HCW safe for all involved including for members of the communities.
- Q. Has the HCW management Policy document that was workshopped during November 2001 been finalised?
- A. Dr Rama replied that all comments received regarding the Policy are on record and will be included in the final version, where considered to be relevant. Mr Kristiansen added that the process is presently at a government level - views expressed in the November discussions will help to inform Policy formulation decisions and form part of the basis for developing the final Gauteng HCW Management Strategy and Action Plan towards the end of the Project. Ms Yawitch replied that all the documents associated with the project are available in electronic format.
- Q. Was reducing the waste stream through recycling considered?
- A. Mr Kristiansen replied that it is necessary to first succeed in getting effective segregation of HCW before increased recycling on the HCGW side can be considered - only one change at a time is proposed. However, existing recycling initiatives will be encouraged wherever possible. The HCW Management Guidelines include recommendations for green procurement and waste minimisation possibilities.

## 10. BREAKAWAY SESSION

Participants elected to attend one of four breakaway groups structured according to the following table:

**Table 6: Structure of the breakaway groups**

HCW Guidelines				
Discussion Section	Group 1		Group 2	
	Modules 1 and 2	Modules 3 and 4	Module 5	Modules 6 and 7
<b>Discussion topics</b>	<ul style="list-style-type: none"> <li>▪ Cross cutting issues</li> <li>▪ How to organise HCW management system</li> </ul>	<ul style="list-style-type: none"> <li>▪ HCW generation, segregation, containerisation, intermediate storage, internal collection and central storage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Collection and transport of HCRW as well as treated HCRW residues</li> </ul>	<ul style="list-style-type: none"> <li>▪ HCRW treatment</li> <li>▪ Disposal of residues</li> </ul>
<b>Target audience</b>	<ul style="list-style-type: none"> <li>▪ Authorities</li> <li>▪ NGOs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Generators</li> <li>▪ Unions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Transport industry</li> <li>▪ Unions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Treatment industry</li> <li>▪ NGOs</li> <li>▪ Unions</li> </ul>
<b>Facilitator</b>	D. Rama		A. Marumo	
<b>Scribe/ Advisor</b>	K. Otto		L. Hill	
<b>Reporter</b>	G. Rossouw		H. Crous	
Floating adviser: T. Kristiansen				
Feasibility study				
Discussion Sections	Group 3		Group 4	
	Chapters 5.1 to 5.6; 10 and 12	Chapters 5.7, 5.9; 7; 11 and 12	Chapters 5.8, 5.10; 6; 8; 9 and 12	
<b>Discussion topics</b>	<ul style="list-style-type: none"> <li>▪ All HCW management activities inside health care facilities</li> <li>▪ Legislation</li> <li>▪ Conclusion and recommendations</li> </ul>	<ul style="list-style-type: none"> <li>▪ External collection and transport of HCRW as well as treated HCRW residues</li> <li>▪ Assessment of scenarios</li> <li>▪ Conclusion and recommendations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Treatment of HCRW and disposal of residues</li> <li>▪ HCRW treatment options</li> <li>▪ Site requirements</li> <li>▪ Ownership and service provision</li> <li>▪ Conclusions and recommendations</li> </ul>	
<b>Target audience</b>	<ul style="list-style-type: none"> <li>▪ Generators</li> <li>▪ NGOs</li> <li>▪ Unions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Transport industry</li> <li>▪ Unions</li> <li>▪ Authorities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Treatment industry</li> <li>▪ NGOs</li> <li>▪ Authorities</li> </ul>	

	▪ Authorities		
<b>Facilitator</b>	S. Nkosi		D. Fischer
<b>Scribe / Advisor</b>	J. Clements		D. Baldwin
<b>Reporter</b>	A. Marumo		D. Fischer

**Table 7: Discussion issues from breakaway session : Group 1**

GROUP 1	FACILITATOR: D.RAMA	MODULES 1, 2, 3 AND 4 OF GUIDELINES
QUESTIONS		ANSWERS/DISCUSSIONS
▪ Is the format of the Guidelines achieving the objective of improving user friendliness?		<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ There is a need for buy-in from smaller HCW generators e.g. private facilities. The current focus is on larger facilities;</li> <li>▪ Generators will be recorded through the registration of transporters;</li> <li>▪ Guidelines should be linked to Occupational Health and Safety committees;</li> <li>▪ Definitions should be harmonised with existing DEAT, DWAF and SABS definitions;</li> <li>▪ The CEO of the health care facility is the responsible person and should be held responsible;</li> <li>▪ Green procurement should form part of HCW generation.</li> </ul>
▪ Are the target groups in Table 1.1 complete?		<ul style="list-style-type: none"> <li>▪ Add Environmental Health Officers (including Engineers) and external practitioners;</li> <li>▪ Infection Control Officer should be included;</li> <li>▪ Traditional and alternative healers should be flagged.</li> </ul>
▪ Is the HCW flow path (Box 1.1) effective in bringing corresponding activities together?		<ul style="list-style-type: none"> <li>▪ Yes.</li> </ul>
▪ Are the estimated cost ranges in Section 1.9 of value in planning a HCW management strategy?		<ul style="list-style-type: none"> <li>▪ To have budget costs tabled is good and useful;</li> <li>▪ It would be an idea to give a ball park cost for a wider range of items;</li> <li>▪ Tied to a specific time period – this is to be highlighted.</li> </ul>
▪ Regulations / Acts to be included in Tables 1.5 and 1.6		<ul style="list-style-type: none"> <li>▪ Local government by-laws to be referred to;</li> <li>▪ National Health Bill to be added;</li> <li>▪ More emphasis on responsibilities at various levels needs to be provided – e.g. job descriptions in table form.</li> </ul>
▪ Is the Glossary in Annex 1.3 of value?		<ul style="list-style-type: none"> <li>▪ Yes.</li> </ul>
▪ Does the target group clearly define the affected parties?		<ul style="list-style-type: none"> <li>▪ Organised labour (Unions) –included;</li> <li>▪ Control system for confirmation of receipt of documents should be included.</li> </ul>
▪ Is Box 2.2 clear about the main steps to set up a HCW Management Plan		<ul style="list-style-type: none"> <li>▪ Yes.</li> </ul>
▪ Are there other matters that should be included in section 2.5.1?		<ul style="list-style-type: none"> <li>▪ No.</li> </ul>
▪ Will it be possible for smaller HCW generators to set up a HCW management plan suitable for their own needs?		<ul style="list-style-type: none"> <li>▪ Small generators cannot have a full management plan;</li> <li>▪ OHS Act will apply in terms of committees and representatives;</li> <li>▪ Small generators must be accountable to a professional body, DACEL or the affected Local Authorities;</li> <li>▪ Different sized organisations must be catered for;</li> <li>▪ Contractors should liase with Local Authorities.</li> </ul>
▪ Are the responsibilities allocated to the various parties achievable?		<ul style="list-style-type: none"> <li>▪ The Environmental Health Officer should be responsible;</li> <li>▪ NGO's are not to be included;</li> <li>▪ A list of responsible authorities should be compiled;</li> <li>▪ The Dept of Labour should take responsibility for the OHS Act enforcement.</li> </ul>
▪ Any parties that should be omitted from the team or added?		<ul style="list-style-type: none"> <li>▪ NGOs are represented on the Steering Committee.</li> </ul>
▪ Is Box 2.11 complete, or are there items to be added or deleted or marked as optional?		<ul style="list-style-type: none"> <li>▪ It is too long.</li> </ul>

<ul style="list-style-type: none"> <li>▪ Are the steps in Box 2.12 comprehensive?</li> <li>▪ Are the steps in Box 2.13 comprehensive?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes.</li> <li>▪ Yes;</li> <li>▪ All anatomical waste should be incinerated;</li> <li>▪ Maceration and disposal of anatomical waste to the sewer should not be allowed.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Are the steps in Box 2.14 achievable?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes, with proper training;</li> <li>▪ Will mercury and PVC free products be legislated? The Guidelines could become the Minimum Requirements.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Are the steps in Box 2.15 (tender procedures for outsourcing of HCW management services) relevant to this document?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes;</li> <li>▪ The Private sector should be involved;</li> <li>▪ The private sector has good generic tender documents for outsourcing of HCW management services.</li> </ul>
<ul style="list-style-type: none"> <li>▪ What proposals can make training programmes more effective?</li> </ul>	<ul style="list-style-type: none"> <li>▪ There is presently almost no training in health care facilities;</li> <li>▪ Multi-disciplinary training for all;</li> <li>▪ Incentives to provide motivation;</li> <li>▪ Commitment from staff is lacking;</li> <li>▪ Training also required at college and university level;</li> <li>▪ Training should be linked to performance - part of performance monitoring;</li> <li>▪ All staff levels must be trained - including managerial staff;</li> <li>▪ The OHS committee should be responsible for training;</li> <li>▪ Pilot: Develop a short SETA approved course;</li> <li>▪ CEO must be responsible for training, since it will impact on his/her delegation of responsibilities.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Is there a need for a pro-forma audit form?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Source information from private hospitals;</li> <li>▪ Performance monitoring must be mandatory.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Is there a need for a Template to provide guidance during the development of a HCW Management Plan?</li> </ul>	<ul style="list-style-type: none"> <li>▪ It is feasible if everyone takes part;</li> <li>▪ Different size facilities could identify themselves in a larger template.</li> </ul>
<ul style="list-style-type: none"> <li>▪ General.</li> </ul>	<ul style="list-style-type: none"> <li>▪ OHS and Dept of Labour should be monitoring the system;</li> <li>▪ NWMS must spell out the responsibilities.</li> </ul>

**Table 8: Discussion issues from breakaway session - Group 2**

GROUP 2	FACILITATOR: S. NKOSI	MODULES 5, 6 AND 7 OF GUIDELINES
QUESTIONS		ANSWERS / DISCUSSIONS
<ul style="list-style-type: none"> <li>▪ Is the Target Group clearly defining the affected parties for this Module?</li> </ul>		<ul style="list-style-type: none"> <li>▪ There should be a link between the transporter and what the service provider requires; similarly the hospital must know the requirements of the transporter. They can't be seen in isolation;</li> <li>▪ The tender specifications should include this;</li> <li>▪ A delegated chain of responsibility must be in place.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Are the Acts listed in Section 5.4 relevant and have any been omitted?</li> </ul>		<ul style="list-style-type: none"> <li>▪ Include the City of Johannesburg Guidelines on HCW transport;</li> <li>▪ Local Authority by-laws e.g. Emergency Services. These need to be standardised across a region/province.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Will the registration of transport companies help combat unauthorised transport methods?</li> </ul>		<ul style="list-style-type: none"> <li>▪ Yes it will help - via continuous monitoring and the reporting system implemented;</li> <li>▪ Treatment plants should only take HCRW from a registered transporter - this will help discourage illegal transporters.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Will the reporting procedures provide information for HCW management strategies?</li> </ul>		<ul style="list-style-type: none"> <li>▪ Resources for registration, monitoring and reporting need to be put in place;</li> <li>▪ Reporting will be web based;</li> <li>▪ Reporting is very important as it will help with the monitoring;</li> <li>▪ A multi-disciplinary approach must be followed;</li> <li>▪ Will transport providers be required to be inspected by the Medicines Control Council like pharmacies?</li> </ul>

<ul style="list-style-type: none"> <li>Are lifting tailgates for bulk loading of HCRW feasible?</li> </ul>	<ul style="list-style-type: none"> <li>A change in containers will impact on transport - economy of scale is needed - customized vehicles with hydraulic lifts may be better;</li> <li>Customised vehicles will be needed if wheelie bins are to be transported.</li> </ul>
<ul style="list-style-type: none"> <li>Is 15 kg too much to be lifted manually?</li> </ul>	<ul style="list-style-type: none"> <li>It is too much for a woman.</li> </ul>
<ul style="list-style-type: none"> <li>Is the Target Group clearly defining the affected parties for this Module?</li> </ul>	<ul style="list-style-type: none"> <li>Yes.</li> </ul>
<ul style="list-style-type: none"> <li>Are the roles and responsibilities for HCRW data recording clear?</li> </ul>	<ul style="list-style-type: none"> <li>Yes.</li> </ul>
<ul style="list-style-type: none"> <li>Will it be feasible and effective to implement the HCWIS as proposed?</li> </ul>	<ul style="list-style-type: none"> <li>This depends on the detail of reporting required. The transporter would already have the totals from the hospitals. Transporters already use a manifest system;</li> <li>The information is important so that hospitals can know how much waste they generate and for future planning;</li> <li>Provincial facilities rely on the data generated by service providers.</li> </ul>
<ul style="list-style-type: none"> <li>Maximum storage time for different categories of HCW?</li> </ul>	<ul style="list-style-type: none"> <li>Collection should occur daily at large institutions; at least weekly at small institutions - refrigeration facilities are necessary.</li> </ul>
<ul style="list-style-type: none"> <li>Pathological waste.</li> </ul>	<ul style="list-style-type: none"> <li>Human Tissue Act covers this;</li> <li>Pathological waste is stored in refrigeration and taken by service providers directly to the treatment facility. Private hospitals phone the service providers immediately when there are any body parts to be disposed of.</li> </ul>
<ul style="list-style-type: none"> <li>HCRW Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>These should also consider other areas where large quantities of biological waste is produced - veterinary, butcher, abattoir etc.</li> </ul>
<ul style="list-style-type: none"> <li>Maximum mass for manually lifted containers</li> </ul>	<ul style="list-style-type: none"> <li>Containers should be puncture proof and spill proof and weight not more than 10 kg.</li> </ul>
<ul style="list-style-type: none"> <li>Is the cut-off date of January 2004 for closure of non-compliant incineration facilities reasonable?</li> </ul>	<ul style="list-style-type: none"> <li>Yes;</li> <li>Non-compliant facilities are already legally vulnerable.</li> </ul>
<ul style="list-style-type: none"> <li>Should classification of HCRW residues be re-evaluated after the initial classification?</li> </ul>	<ul style="list-style-type: none"> <li>It depends on the reliability of the generator. The precautionary principle should apply.</li> </ul>
<ul style="list-style-type: none"> <li>How is the balance to be struck between refusing items that could be classified as HCW and minimising HCRW by diverting all non-infectious items to a general landfill?</li> </ul>	<ul style="list-style-type: none"> <li>Waste must be carefully classified.</li> <li>Medical waste is mostly treated as hazardous waste i.e. the precautionary principle is applied.</li> <li>Declassified HCRW residues can be disposed of at a B* General Waste disposal site.</li> </ul>
<ul style="list-style-type: none"> <li>General</li> </ul>	<ul style="list-style-type: none"> <li>A tool for decision-making on changes to be implemented - must be affordable, environmentally friendly.</li> </ul>
<ul style="list-style-type: none"> <li>Transport</li> </ul>	<ul style="list-style-type: none"> <li>The reusable container to be piloted must be easy to stack, pack efficiently, wash and sterilize/disinfect;</li> <li>Treatment costs will be charged on a mass basis.</li> </ul>
<ul style="list-style-type: none"> <li>Reusable plastic containers</li> </ul>	<ul style="list-style-type: none"> <li>Important: standardisation of containers;</li> <li>There may be a problem with theft of reusable containers;</li> <li>Cleaning should be done by the HCRW treatment facility - the container must go for cleaning as soon as it is emptied;</li> <li>Cleaning preferably not manual - has a cost implication initially;</li> <li>Manual emptying is not the ideal scenario, but is alright as long as the contents is not handled;</li> <li>Must take into account all sizes of syringes, including 50cc;</li> <li>Can be used on a rotational basis if standardized for all hospitals;</li> <li>The life span of the reusable containers is not known, but is at present estimated based on similar applications;</li> <li>Transition period must be well managed so that the hospitals are prepared.</li> </ul>
<ul style="list-style-type: none"> <li>Biological waste e.g. Placentas</li> </ul>	<ul style="list-style-type: none"> <li>Must be put in a leak-proof container, not reusable, and be incinerated.</li> </ul>
<ul style="list-style-type: none"> <li>What drives the concept?</li> </ul>	<ul style="list-style-type: none"> <li>Cost is a factor, emissions and also OHS issues, not accessible to rodents, flies, etc.</li> </ul>

▪ How will service providers know what the new system requires?	▪ Meetings will be held to communicate changes that need to occur.
▪ Who will supply the new equipment?	▪ Service providers will provide most of the reusable containers under their service contracts.
▪ Challenges	▪ Design for most practical container; ▪ Education and training on the new system; ▪ Acceptance of new system by users;
▪ What about recycling	▪ Has not been included in the pilots. This will be considered once the new system is in place - good segregation is needed first; ▪ Private and some public hospitals do recycle already on various levels.
▪ Handling of pharmaceuticals.	▪ Should be sent back to the pharmaceutical company that supplied them and need to be handled by a chemical HCRW treatment facility.
▪ Can non-PVC containers be enforced?	▪ The feasibility study will advise on alternative containers that can be used; ▪ Control/enforcement is difficult at this stage - voluntary compliance will be encouraged.

**Table 9: Discussion issues from breakaway session - Group 3**

GROUP 3	FACILITATOR: A.MARUMO	FEASIBILITY STUDY
QUESTIONS		ANSWERS/DISCUSSIONS
▪ Options for waste minimisation and recycling		▪ There must be a procedure and standards; ▪ Can revenue be generated through recycling? ▪ Is there a market for the recycled materials?
▪ Options for increased use of reusable products.		▪ Must be clearly defined; ▪ Must be listed.
▪ Relevant legislation.		▪ Human Tissue Act; ▪ One umbrella legislation should be in place; ▪ Law enforcement must take place.
▪ Biological waste.		▪ Current closure of incineration facilities leads to body parts being opened to misuse; ▪ Maceration should be included in the guidelines.
▪ Emissions.		▪ Emission monitoring should be included in the guidelines and standards should be clearly specified.
▪ Target audience.		▪ Private sector should be included.
▪ External collection and transport of HCRW.		▪ All vehicles must have a satellite tracking system, communication system and spillage kit; ▪ There should be procedures for road spillages; ▪ Radius for external transport which will require refrigerated transportation should be specified; ▪ The maximum allowable storage period should be specified.
▪ Training.		▪ There should be regular training and audits; ▪ Management should sign a pledge.

**Table 10: Discussion issues from breakaway session - Group 4**

GROUP 4	FACILITATOR: D. FISCHER	FEASIBILITY STUDY
QUESTIONS		ANSWERS/DISCUSSIONS
<ul style="list-style-type: none"> <li>▪ Treatment facilities</li> </ul>		<ul style="list-style-type: none"> <li>▪ Clarification on regional facilities is needed;</li> <li>▪ There should be no exclusion of any type of technology;</li> <li>▪ A financially sound approach is needed;</li> <li>▪ Negative impacts must be taken into account e.g. leakage to underground water;</li> <li>▪ Improved standards at treatment facilities are needed, but these should not make the process less labour intensive;</li> <li>▪ Make better and safer use of resources;</li> <li>▪ A danger of centralisation is the resulting dependence on one or a few service providers;</li> </ul>
<ul style="list-style-type: none"> <li>▪ Storage requirements</li> </ul>		<ul style="list-style-type: none"> <li>▪ Treatment sites should have the ability to hold some HCRW;</li> <li>▪ Reduce time period leading up to destruction - will pre-empt theft;</li> <li>▪ Cool room should be available for pathological HCRW in case of breakdowns;</li> <li>▪ Hospitals need a cool room to cater for public holidays when no collection is done;</li> <li>▪ 7-day maximum collection period.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Tender process</li> </ul>		<ul style="list-style-type: none"> <li>▪ Separate tenders will deal with supply of disposable containers, transport of HCRW, , treatment and disposal, etc.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Segregation of waste</li> </ul>		<ul style="list-style-type: none"> <li>▪ This has an impact on the handling of residues and also on the treatment technology;</li> <li>▪ Has landfilling been properly described in the document in terms of residue handling?</li> <li>▪ Poverty alleviation through recycling must be considered.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Transport of residues</li> </ul>		<ul style="list-style-type: none"> <li>▪ Residues must go to a hazardous landfill until proven otherwise;</li> <li>▪ Volume reduction through shredding, bulking.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Treatment technologies</li> </ul>		<ul style="list-style-type: none"> <li>▪ Could ash from incinerators be de-listed?</li> <li>▪ Need to consider health impact of burn vs. non-burn technologies;</li> <li>▪ Dioxin and furins - impacts of these to be considered;</li> <li>▪ Need to take into consideration where South Africa is in terms of technology;</li> <li>▪ South Africa has signed an international convention in terms of dioxins and furins;</li> <li>▪ Move away from incineration; only - use technology suitable for the type of waste;</li> <li>▪ Highlights importance of good segregation to reduce quantities;</li> <li>▪ Involve the National Department of Epidemiology;</li> <li>▪ Possible use of EU standards?</li> </ul>
<ul style="list-style-type: none"> <li>▪ Siting requirements</li> </ul>		<ul style="list-style-type: none"> <li>▪ Minimum requirements are needed;</li> <li>▪ Environmental equity / density of population.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Ownership option</li> </ul>		<ul style="list-style-type: none"> <li>▪ Private ownership with necessary incentives and constraints;</li> <li>▪ Recovery of energy / heat from waste?</li> <li>▪ A competitive environment is needed;</li> <li>▪ A trial run could provide assessment of the technology;</li> <li>▪ Devolvement of functions from Provincial to local authority level.</li> </ul>

## 11. REPORT BACK AND DISCUSSION

Rapporteurs from each group reported back as follows on the main issues discussed in their groups:

### Group 1: Glynis Rossouw

- The Guidelines presently focus mainly on large HCRW generators. There also needs to be buy-in from smaller health care facilities;
- It was felt that NGOs should not necessarily be focussed upon as they are part of the Project Steering Committee;
- The new Health Bill could be added to the list of relevant legislation;
- Maceration and disposal of anatomical waste e.g. placentas to the sewer should not be allowed;
- Private sector documents on tendering for outsourcing of HCW management services should be incorporated into the process;
- The tendering process should be generic and based on SHE policies;
- At present there is limited training. Multi-disciplinary training must be offered to all staff levels and should also be introduced at University/Technikon level;
- A SETA approved short course should be offered for health care personnel.

### Group 2: Hanré Crous

- There should be a link between generators, transporters and treatment service providers so that each knows what the other requires;
- The City of Johannesburg Guidelines on HCW transport and relevant sections of the Local Authority by-laws need to be included;
- Resources for registration, monitoring and reporting need to be put in place. Reporting is important as it will help with monitoring and will also assist hospitals to establish how much HCW they are generating;
- Will transport providers be inspected?
- Maximum storage time for HCRW should be one week, provided that refrigeration facilities are available;
- Other generators of large quantities of biological waste should also be considered e.g. veterinary institutions, abattoirs;
- HCW must be classified with care. De-listed HCRW can be disposed of at a B<sup>+</sup> General Waste site;
- Tablets should be returned to the pharmaceutical supplier and be treated by a chemical HCRW treatment facility.

### Group 3: Albert Marumo

- Procedures and standards for waste minimisation and recycling need to be in place;
- The Human Tissue Act should be included in the relevant legislation;
- Closure of non-compliant incineration facilities could lead to the misuse of body parts;
- Emission monitoring and standards need to be included;
- Vehicles must be fitted with a tracking system and spillage kit;
- Regular training (top management down) and audits must occur;
- The private sector should be included in the target audience.

#### **Group 4: Dee Fischer**

- Clarification on regional facilities is needed. There is a danger of too much dependence on one or two facilities;
- No technology types should be precluded;
- Treatment sites should have the ability to hold some waste in cold storage. Work towards to shorter time interval before destruction to pre-empt theft;
- Separate tenders should deal with supply of disposable containers, transport, treatment and disposal, etc.
- Poverty alleviation through recycling must be considered;
- Residues must go to a hazardous landfill until proven safe to dispose of unless de-listed;
- Where South Africa is in terms of technology must be taken into account;
- Check if assumptions made in terms of finance and environment in the model were correct.

#### **Comments:**

- Recycling of HCGW needs to be encouraged at source because of the risks associated with scavenging;
- Look at projects in private hospitals whereby the hospital gets free collection of recyclables;
- Responsibilities must be clearly defined so that no "buck passing" takes place;
- One comprehensive set of HCW legislation for the whole country is needed;
- Service providers should be given the opportunity to present to the DoH on what services they offer.

## **12. CLOSURE AND WAY FORWARD**

Dr Rama thanked workshop participants for their valuable contribution to the proceedings on a wide range of issues.

- The workshop proceedings would be circulated to participants;
- Additional comments should be forwarded before 18 October 2002 via fax to:  
(011) 355-1663 or via e-mail to: [torbenk@gpg.gov.za](mailto:torbenk@gpg.gov.za);
- A further workshop will be held to deliberate the pilot projects, the results of which will inform the process.



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