DACEL

SUSTAINABLE HEALTH CARE WASTE MANAGEMENT IN GAUTENG

PILOT PROJECT – LERATONG HOSPITAL

SURVEY REPORT

This Survey report gives the results of an intensive study conducted at Leratong Hospital in preparation for the development of a new waste management system for Leratong. Hospital.

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EXECUTIVE SUMMARY

The Executive Summary gives a brief overview of the status quo in Leratong at the time of the survey. It describes the present situation, lists some critical issues and problem areas and gives some critical recommendations. More details about the findings and supporting documentation can be found in the other sections of the report and in the appendices

Description of Present Situation

Leratong Hospital has a functional waste management system in place. An attempt is made to separate the health care risk waste and health care general waste. A colour-coding system of red for infectious waste and black for general waste is used. A 40 litre thin micron transparent liner is also used for both health care risk waste and health care general waste. In addition, inferior quality sharps containers and 140 litre cardboard boxes with red liners are used to store and transport the infectious waste.

A Service Provider is contracted to supply and remove the cardboard boxes and sharps containers from the premises for incineration. The contract is signed by the DoH. However, no specifications are given for the types of containers, lid or liners to be used and there is no system for monitoring the service rendered.

Cardboard boxes that are used as containers are kept in the sluice rooms and occasionally in the ward or unit areas. They are carried out manually (or a over-bed trolley is used) into the passage way where they are left for collection by the Cleaning Department. There is a routine of collection three times daily.

The trolley used for transporting the waste to the Central Storage Area, is old and generally overloaded. Some of the waste boxes and bags have to be unloaded at the external door for the trolley to pass through. The nursing staff takes the sharps from the individual sections using a stainless steel ‘shopping’ trolley.

There are various places used to temporarily store the waste. These are the sluice rooms, the passage- ways or in the unit. The central storage area is a well-ventilated building that is accessible with a ramp. There is no security for the waste when left in the central storage area. This area is used for the collection of plastic bottles, food, cardboard boxes and sharps containers.

The Buying Department is responsible for the procurement of all the equipment for waste. There is a stock control system in place. The Buying Department manages the stock control levels, but periodic lapses do occur which has resulted in the departments stockpiling on boxes, sharps containers and plastic liners.

Buhle Waste Company, who has a contract with the Sanumed for a certain quote of waste to be incinerated, takes the health care risk waste off site. Once their quota is fulfilled, they then take the waste to Pik-it-up or an incinerator in Klerksdorp.

The health care general waste is taken by Mogale Municipality for disposal to landfill.

Reasons why waste is not segregated effectively

- Using the transparent liners for both categories of waste creates confusion among the workers.

- Inappropriate placing of containers, travel distances, lack of containers for general waste, and the inefficient supply of liners all contribute to the present problems in waste segregation.

- There is no “people” management system to sustain the health care waste system as well as poor staff moral in the health service. The lack of accountability on the part of the doctors and to some extent the nursing staff also contributes to incorrect segregation.

- The practice of general assistants re-sorting the waste is unacceptable and must be stopped.

- Generally, the containers are in a bad state of repair and there were many complaints from the staff that bins had been condemned, but not replaced.

- Job performance of health workers is influenced by feelings of being unappreciated and disempowered.

- Various smaller containers such as wire baskets, metal and plastic pedal bins, and other types and sizes of plastic bins are provided for the collection for both health care risk waste and health care general waste.

- Where containers are not provided, old cardboard boxes and hanging liners on any available hook or stand are used. These cardboard boxes are overfilled, waste is often mixed up and the liner misplaced.

- The liners provided are inappropriately sized with an unknown micron thickness. The red liner provided for the cardboard box is the only suitable liner used.

Critical Issues and Problem Areas

Although Leratong Hospital has a workable waste management system in place there are many opportunities for improvements. There are two main critical issues:

1. The type, quantity and condition of the equipment supplied

Generally, the equipment provided for waste management is of poor quality and ill suited for the task.

- Presently the 10 litre sharps polyethylene plastic containers is the only size used.

- The lids don't fit well, the opening at the top is difficult to use and the lid does not seal properly. It is unsafe to close these containers, particularly if they are filled to the top. The size of the containers is too large for some areas and a container can be kept for as much as one year before it is filled.

- Round 10 litre specicans are used extensively for anatomical waste in Maternity and OPD. These are then sealed and taken to the Mortuary for collection by the service provider. The kick-about trolleys with a large stainless bucket (up to 20 litres) are also used with or without a liner.

- The 140 litre cardboard boxes used for disposing of infectious waste are unsuitable as they leak when the liners are not correctly placed. The box is used for all applications and this encourages overfilling when used for napkins and other wet waste. The boxes become heavy and are difficult to move, increasing the risk of back injuries. These containers are too small to dispose of amputations and large sections of plaster of paris (POPS).

- Three types, colours and sizes of liners are purchased. The liners are not sized for the containers and they are far too big or they can be misplaced. The micron thickness is also not suitable, except for the red liner inside the cardboard box.

- There are also a variety of re-usable containers used with the different coloured liners and are interchangeable between risk waste and general waste. Many of the bins are broken, rusty, do not work efficiently or have parts missing. In some sections, an insufficient number of containers are supplied.

- The nursing (dressing) trolley is widely used and has a transparent, red or black liner stuck to the end. This liner is not easily accessible as the opening is closed. The sharps container is placed on the lower shelf of the trolley that makes it inaccessible.

- There is no means of transport for the cardboard boxes from the sluice rooms to the passageways. The manual handling risks are therefore high. The trolley used for collecting the waste from the passageways to the central storage is dilapidated, but still functional. Wire supports provide the only means for preventing the waste from falling during transportation.

- There are standard specifications on file for the purchasing of liners and containers and the buying department is not aware of the importance of good quality products. When equipment is not available, the staff members have improvised. This has led in some cases to a deviation from the colour-coding standard that impacts negatively on correct segregation.

- The issuing and use of protective clothing is not well managed. There are problems with regard to the quality, size, suitability and availability of the protective equipment provided.

2. The management control system to support the use of the equipment.

Problems with the management control system need to be addressed in order to deal with the present problems in the HCWM system.

The management control system of policies, procedures, supervision, enforcement, equipment procurement, financial allocations, infection control practices, OH&S standards, contract management and training underpin and support the supply and use of the equipment. The present problems experienced in the HCWM system cannot be effectively addressed as long as these shortcomings continue to exist.

Waste segregation

Segregation is poorly carried out in all areas. There is mixing of waste in both the health care risk waste stream and the health care general waste stream. There are various factors that contribute to poor waste segregation. These include:

- Inappropriate siting of containers
- Insufficient number of containers provided
- Non adherence to the colour-coding (red, black and transparent liners used)
- Lack of enforcement of the colour-coding standard
- Non supply of the correct coloured liner causing the workers to improvise
- Using the transparent liner for both health care risk and general waste
- No health care general waste containers available
- Staff negligence
- No supervision and enforcement

Policy and Procedures

Procurement and ordering procedures: There are some procedures in place to support the system. There are procedures for the procurement and ordering of equipment from the buying department and the collection and cleaning routines for the removal of the waste to the central storage area. These procedures are well documented and rigidly carried out by all the units within the hospital. This enabled the survey team to obtain reliable statistics for quantification.

Collection and cleaning routines: The collection and cleaning routines are well managed and carried out regularly, three times a day. However, the equipment and chemicals used for cleaning are inappropriate and the ability to attain an acceptable level of cleanliness and infection control is severely limited.

Management system: Research in this area showed that there is no management system in place to support the HCWM system and that there is a lack of clarity about the following:

- Roles and responsibilities
- Accountability

- Policy and procedures (procurement, OH&S, financial allocation, reporting etc)
- Decision making
- Supervision and enforcement
- Incentives.

Waste management policies and procedures: There are no waste management policies and procedures in place and the waste management standards on the whole are not formally documented in any way. There are some posters, report forms, ordering forms available. The Infection Control Department often tries to fill these gaps.

Technical and performance specifications: There are no technical or performance specifications to guide the procurement of equipment. At Leratong Hospital there is little understanding in the Buying Department of the role important role that it plays and the decisions that are made that can adversely affect the whole hospital. The purchasing of hazardous chemicals is done without consulting the Infection Control Department or the Health and Safety Committee. No risk assessment is done on the chemicals and no data sheets are obtained.

Occupational health and safety standards: The Occupational Health and Safety Standards and the profile of the Health and Safety Committee in the whole management structure are very low. In addition, there is no external audit of the waste management system by the regional environmental health service.

Incident reporting for needle-stick injuries is carried out but not all incidents are investigated. Only 'major' incidents are investigated but there is no documentation that defines a major incident.

Hazardous chemicals: There is a lack of control over the procurement, use and disposal of hazardous chemicals.

Skills, Knowledge and Training

Health worker knowledge: Knowledge levels were found to be better among workers at the lower end of the traditional health worker hierarchy. Doctors showed the least understanding of the present health care waste system.

The knowledge of health workers about the health care waste system is often good and it is important that improvements to the current system should where possible reinforce the present level of knowledge. Many of the health workers interviewed for the focus groups could describe the present equipment and knew the correct colour-coding and segregation practices.

They also knew the dangers of putting health care risk waste with the general waste. They could describe the dangers facing scavengers on landfill sites who would be exposed to the waste.

Service provider training: The service provider has provided limited intensive training at the hospital and some health workers felt that they had benefited from

this. Information from such training is disseminated to other workers through a system of regular feedback.

External Service Provider

Service provided: The present service offered by the service provider is very limited. This leaves the hospital with the responsibility for the management of the waste system. Unlike the private sector the present system of health care waste management in the public sector does not seek to establish a working partnership with the service provider. The advantage of a partnership of this nature is that the service provider can offer a specialist waste advisory and training service to the health care institution.

Tender specifications and contractual obligations: The present tender specifications are weak and there are no contractual obligations on the service provider to offer training or an advisory and problem solving service. Many private health care institutions have daily access to dedicated waste consultants from the service provider. In addition, with the implementation of new equipment, the service provider facilitates a comprehensive training programme.

Critical Recommendations

Equipment

Standard specifications for the correct type, material, sizes and quantities are necessary. Equipment must be correctly colour-coded and labelled and coupled with improved methods for handling and transporting.

Improved transportation is essential to reduce the manual handling that occurs. The provision of adequate protective equipment that ensures worker's safety makes people feel valued and appreciated. The introduction of the new HCWM system should therefore include a risk assessment to determine the requirements of protective equipment. A documented system that includes procurement, issue, use, supervision and enforcement is necessary.

Segregation

Segregation will improve with the provision of new, more easily identified and colour-coded equipment supported by a sound management system of regular training, supervision, monitoring and enforcement.

Management control system

The introduction of a robust management system that can support health care waste activities in health institutions is essential. This must include the improvement of institutional policy, management structure, lines of accountability, roles and responsibilities, monitoring, supervision and enforcement, job performance and incentives. These are all areas where new knowledge and skills should be introduced.

"People" management

Multidisciplinary teamwork should form part of the management approach to HCWM. Doctors need to be made part of HCWM team. The overriding concern

for doctors with regard to waste disposal, is the safe disposal of needles. By addressing this issue, doctors may be more involved and cooperate more in the process.

The new management system should also include other categories of workers such as allied workers and administrative staff when developing the team approach. In addition, the administrative and operational sides of HCWM need to be properly integrated.

The new management system should be built on positive feedback and merit. Incentives do not always have to be financial.

Education and training
There is evidence at Leratong that the present in-service training has been effective for those workers who have attended training sessions run by Buhle. The knowledge levels of workers, who attended training, appear to be good.

However the in-service training does need to be strengthened so that it can meet the needs of more categories of workers. In-service training should be multi-disciplinary and should address management capacity.

The “feedback” system of communication inside the hospital can be utilised for information dissemination.

The term 'health care risk waste' is not clearly understood, but the term “medical waste” is widely used. It is important to consider introducing a new, agreed upon system of terminology which will be used in awareness programmes, training and print materials.

The External Service Provider
There is an opportunity for the service provider to offer a better and more comprehensive service to the hospital. A partnership between the health care institution and the future service provider could ensure that the service provider would be responsible for the procurement of equipment and would be contracted to provide training and an advisory / consultancy service.

1. INTRODUCTION

1.1 History

The Gauteng Sustainable Health Care Waste Project aims to improve the management of health care waste in Gauteng. There are presently 29 hospitals and 453 clinics in Gauteng. An essential task in improving waste management at health care institutions like these is to design an improved system of containerisation of waste for public health institutions in Gauteng. For this reason, two pilot sites have been chosen to test new equipment and new procedures. These are:

- Leratong Hospital in Krugersdorp (the subject of this survey report)
- Itireleng Clinic in Soweto.

These pilot sites also provide an opportunity to test other aspects of the overall work of the Gauteng Sustainable Health Care Waste Project. In particular the sites will test the following:

- The conclusions of the feasibility study
- Aspects of the Health Care Waste Management (HCWM) strategy
- The policy for HCWM in Gauteng
- The guidelines and the health care waste information system.

1.2 The survey at Leratong Hospital

What it contains
This report is the conclusion of a survey conducted at Leratong Hospital to inform the development of the improved HCWM system. It combines both technical and non-technical aspects of the present HCWM system at Leratong.

The purpose of the survey

- To establish the status quo within Leratong Hospital
- To capture the present procedures and processes followed
- To obtain information that will inform the decision making for the development of a new waste management system.

This document does not describe the recommended new health care waste system. A description of this is found in the Health Care Waste Management Plan for Leratong.

1.3 Survey methodology and principles

The survey was conducted with the full participation of the staff of the hospital, guided by the Health Care Waste Management Committee. There are three components to the survey.

1. **Problem analysis**

This was conducted with the Waste Management Committee and a cross section fifty representatives drawn from all units in Leratong Hospital. The results of this analysis are the findings of this group.

2. **Focus group discussions**

These were conducted with representatives from groups of hospital staff primarily concerned with health care waste. Altogether sixty-seven health workers including doctors, all categories of nursing staff and general assistants, participated in these groups. Focus groups were conducted in local languages as well as English to facilitate maximum participation.

3. **A detailed equipment and systems survey**

This survey was conducted in the following way:

- **Questionnaire:** Each section of the hospital was asked to fill in a questionnaire to identify the types of waste generated in each section.

- **Detailed system analysis:** This was done with various departments investigating and analysing all existing documentation and routines used in the hospital. The systems audit also included the procurement documentation, the documentation with regard to the service provided by the service provider, the types and quantities of waste and the present costs. Other aspects included the reporting of incidents, disaster procedures, the issue and use of protective equipment.

- **Physical inspection:** This was done in all areas of the hospital, using a checklist. The purpose of the inspection was to identify the quantities, position, condition and the sizes of containers presently used in each section. At the same time, the degree to which the present procedures are followed was assessed and recorded

1.4 Scope of the survey

The survey was conducted on the site of Leratong and extended to all the aspects relevant to waste management. The research did not extend in detail to the external service providers and suppliers other than to establish what quantities were purchased and removed from the site.

2. BACKGROUND INFORMATION OF LERATONG HOSPITAL

2.1 Situation

The Leratong Hospital is situated on the outskirts of Kagiso 2 near Krugersdorp in the Gauteng Province of South Africa. The site is situated on the corner of Randfontein and Adcock Roads. Postal address is Private Bag X 2058, Krugersdorp 1740. The hospital is sited on land that belongs to the Gauteng Provincial Government. The hospital serves a wide spectrum of the population from the surrounding suburbs of Krugersdorp, Randfontein, Roodepoort, Kagiso, Chamdor, Dobsonville and Soweto, Magliesburg, Muldersdrift and Fochville.

The layout of the hospital consists of a central passageway with four double storied parallel buildings linking into the centre passage on both sides. This provides three levels: ground, first and second floor. There is a Nursing College situated on the northwest corner of the site. The main Manager's Block is above Casualty at the entrance of the hospital and the accounting section is housed in a building opposite the Main Nursing College on the north west side. There is a mortuary, stores, linen and kit room. The kitchen is situated below the Nursing College.

An incinerator is housed near the workshop and boiler house in the south west part of the site. Although the incinerator is still in working order, it is no longer used as it is unable to meet the Gauteng minimum requirements (November 2001) for emissions to the air. Waste is incinerated off site.

2.2 Staffing

This institution has 706 Beds with an average occupancy of 85%. The nursing staff numbers continue to decrease and this is the general trend across the province. The table below shows the breakdown of staff per unit:

Area	Numbers of Employees
Medical	
ICU	42
Theatre & CSSD	66
Medical	106
General Surgical	74
Plastic Surgical	24
Orthopaedic	46
ENT, OPD and POLY	34
Renal	10
Gynaecological	22
Anti-Natal	62
Post-Natal	
Paediatric	75
Psychiatric	20
Casualty	40
Total	585

* not in total

Area	Numbers of Employees
Support	
Pharmacy	22
Physiotherapy	5
Blood Bank	5
x-ray	25
Kit Room	6
Mortuary	3
Laboratory (outsourced)	29 *
Nurses in Residence	147 *
Total	**66**
Non-Medical	
General Assistants	165
Stores	6
Security	24
Kitchen	49
Laundry	9
Administration	
Workshop	17
Grounds men	8
Total	**278**
Total Staff Complement	**929**

* not in total

2.3 Plant and equipment

The table below lists the main energy sources used by Leratong Hospital:

Energy Source	Capacity
Electricity (Transformers)	8 x 500 kVa 6.6 Kv
Steam	3 x Boilers 750 kPa
Piped Oxygen from a bulk VIE	
Diesel	9000 x 2 underground tanks
Batteries	12 standby plants
Other Gases: Nitrogen, CO2, Nitrous Oxide	

3. ORGANISATIONAL INFORMATION

This section outlines the organisational framework at Leratong Hospital, the provincial and regional framework and the present service provider support.

3.1 Leratong Hospital organisation

a. Management organisation

CEO: Dr. B. Wojtowicz.
She has held this position for over 40 years.
Deputy Director Administration and Support Staff: Mr. J. Dube
Nursing Manager: Mrs Khoza
Nursing Services: Mrs. M. Khoza,
Administration: Mr. T. Monnanyana
Maintenance: Ms. S. Marrporda
Support Services: Ms Marpordi

b. Departmental organisation

The discussion of departmental services involves only departments within the hospital that have a role in waste management. These are:

- Nursing services
- Administration
- Maintenance
- Support services.

Infection Control Department
Sr. Mpela and Sr. Nkolonzi run the Infection Control Department. Sr. Mpela has been appointed as the Waste Management Co-ordinator for the pilot project. They have a cross-functional responsibility in the hospital for monitoring the infection control, hygiene and waste management standards.

Administration
The Administration Department falls under the Deputy Director, Mr. Dube. This section is divided into three main areas:

- Personnel
- Administration
- Finance.

Cleaning Department
The Cleaning Department falls under the Administration Department. The person responsible is senior administration officer, Mr. Monnanyana. The senior administration clerk, Mr. J.T.M. Lekone is responsible for the work scheduling and training of all the general assistants (GA's).

The general assistants are cleaner grade II with domestic rank designation of ward assistant. The posts in Theatres and Sterilisation sections are those of occupational class operator.

The general assistants fall into the following categories:

- general assistants 118
- ward helpers 25
- operators 17
- housekeepers 5

The following table lists the allocation of general assistants to the individual wards:

Ward or unit areas.	Number of general assistants and ward helpers allocated.
Wards 1-4	2 GA's I ward helper
Wards 5-6	4 GA's and 1 ward helper
Ward 7	3 GA's
Ward 9 – Renal	2 GA's and 1 ward helper
Ward ICU	2 GA's and 1 ward helper
Ward 9 Paeds ICU	2 GA's and 1 ward helper
Ward 10 –11	2 GA's and 1 ward helper
Ward 12	1 GA
Wards 14-24	2 GA's and 1 ward helper
Ward 25	1 GA
Casualty	4 GA's and 1 ward helper
x-ray	1 ward helper
Poly Clinic	1 GA
Theatre	2 Ward helpers and 13 operators
CSSD	4 operators and 2 ward helpers
Nurses Residence	13 GA and 5 housekeepers
Cleaning Department	53 GA's
TOTAL NUMBER	**118 general assistants + 25 ward helpers + 17 operators + 5 housekeepers**

Buying Department

Mrs. Busi Ndlovu (provisioning administrative officer) runs the Buying Department and reports to senior administration officer, Mr. Monnanyana. The Provisioning Management Department has a staff complement of 34. Mrs Ndlovu's role is to see to all the procurement needs of the hospital. In her section she has the following responsibilities:

- Warehouse stores
- Dry dispensary
- Purchasing of equipment
- Inventory of hospital equipment
- Loss control
- Cost centres
- Linen room

Pharmacy
Mrs H. Bothma and Ferrahnay Lahri run this. The Pharmacy Department has a staff complement of 22. The stock is purchased from the Medical Supplies Depot in Auckland Park. The Pharmacist at the hospital is responsible for the stock control and the pharmaceutical budget for the hospital.

c. Committees

There are three committees operating in the hospital where HCWM is significant: These are:

- The Emergency Action Committee
- The Health and Safety Committee
- The Quality Assurance Committee.

Emergency Action Committee
The Emergency Action Committee has recently become active. The disaster plan is presently being updated.

Occupational Health and Safety Committee
The Occupational Health and Safety Committee structure is well established at Leratong Hospital and has been operating for a couple of years. There are 26 elected members on the committee and scheduled meetings are conducted on a monthly basis. Mr. Dube – deputy director is the co-ordinator for occupational health and safety within Leratong and Mr. Khuduge, senior administration officer sits on the committee. Ms. P. Selepa is the chairperson. A total of 24 health and safety representatives have been appointed from nursing, allied disciplines, social welfare and porters. There is no representation from facility management and the workshop. Feedback to hospital management is given in the form of monthly reports.

Quality Assurance Committee
This committee helps to set standards for the hospital. The guidelines for quality assurance come from the Provincial Health Department. There are eighteen standards of general cleanliness. The chairperson of the Occupational Health and Safety Committee is a member. At the moment, the Infection Control Department is not involved. Feedback to hospital management is given in the form of monthly reports.

3.2 Provincial and regional arrangements

a. Gauteng Department of Health

The daily operation of the hospital is governed by the requirements of the Gauteng Department of Health. The provincial health department has recently completed a major restructuring exercise. This has meant that many previously provincial staff members have been placed out in the regions and districts to help support the implementation of the district health system.

This restructuring has many implications:

- People tend to be in jobs for a short period only
- Key posts are still unfilled
- There is uncertainty over the future of some key management positions
- Staff are not sure who holds specific responsibilities
- There are other fall-outs that are inevitable when major restructuring exercises occur.

There are a number of things that have a direct bearing on health care management:

- The directorates in the provincial Department of Health that have most involvement with HCWM are Occupational Health and Safety and Environmental Health.

- At a provincial level the development of the Gauteng Shared Services Centres will change the tender process. These centres will operate as a central agency for all contracts.

- The formal training programmes offered through the Department of Health are commissioned at the provincial level. A formal training needs analysis is conducted province wide.

b. Department of Health Region A / West Rand

Leratong Hospital falls in the West Rand District Service of Region A. The Director is Mrs Mekgwe. The West Rand District Service is coterminous with the District Councils / local authorities such as Mogale. The region plays a limited advisory / liaison and coordination role of with regard to health care waste management at Leratong. The regional assistant director for Occupational Health and Environment, Mr Benny Maphaka is overcommitted. He does not have a hands-on role at Leratong and is not involved in the Occupational Health and Safety Committee at the hospital. However he was actively involved with developments in this particular project until the beginning of May. After this he moved to take up a new post outside the West Rand.

Although formal training is offered through the region there are presently no formal training programmes in HCWM. At the moment there is no programme of occupational health and safety teaching organised through the office of the regional Assistant Director. Although the regional structure allows for additional environmental and occupational health appointees, these posts have not yet been filled.

The systems support manager is in a critical middle management position to support the development of management and other capacity through the region. The systems support manager for Region A is Ms Johanna More.

3.3 Service providers

The following table shows the various contracts that have been signed for dealing with waste:

Company	Responsibility	Period of contract	Contract/ Tender No.	Comments
Buhle Waste C.C.	- Disposal of medical waste (risk waste) - Provides containers and a service	1 April 2000 – 31 March 2003	Provincial contract GT 1059 MI	- Contract previously with Skip Waste for the removal of sharps and specicans. At the closure of the Incinerator in June 2001, the contract was amended to include all waste and transferred to Buhle Waste - Collects 4-5 times weekly
Mr. F.J. Brink	- Removal of kitchen waste food - Provides drums and removes from site	1 October 2000 – 30 September 2001	Hospital Tender No. ITLH015/2000-2001	Contract has expired, but the food continues to be collected
Mogale City Local Municipality	- Disposal of general waste - Provides 28m^3 roll on container	Service	N/A	The skip is removed approximately 8 times per month
Rainbow Waste Paper C.C.	- Recycling of cardboard and paper -Collects from the site	Unknown	Unknown	Collects monthly
D & D Projects (Pty) Ltd	- Used fixer and x-ray film for silver recovery - Pays for fixer and x-ray films	Unknown	Tender documents available	The silver recovery creates a source of revenue

Company	Responsibility	Period of contract	Contract/ Tender No.	Comments
Sanumed	Contract with Laboratory who is independently owned	Unknown	N/A	Collection 1 weekly
Containers provided by Sanumed. Transported to H.O. where it is collected by Sanumed	Blood Bank is independently owned		N/A	Removal of sharps occurs at the same time as blood is delivered

3.4 Policies

There are no policies and procedures for waste management. The only policies available are for occupational health and safety and quality assurance. Both are issued from the Province and are frameworks rather than organisational policy for an institution like Leratong.

3.5 Roles and responsibilities at Leratong Hospital

The roles and responsibilities of the various players described in this section only relate to those responsibilities that have a direct or indirect influence on the management of waste. It should be emphasised that there is no written document detailing roles and responsibilities in waste management and so this information is a combination of information from interviews and other documentation.

a. Management

Senior hospital management does not have any day-to-day responsibility for waste. Instead, they act as a reporting structure for infection control and the Occupational, Health and Safety Committee. They are the decision-makers for the hospital on matters relating to HCWM.

b. Role and responsibilities of medical services

Infection Control: Infection control has a wide range of responsibilities in relation to HCWM. This includes:

- Ensuring the application of standard precautions for infection control
- Conducting campaigns e.g. HIV/AIDS in the workplace
- Reporting and follow up of nosocomial and communicable diseases
- Follow up on laboratory reports of infections
- Convening inservice training with PDD
- Liaison with Buhle

- Trouble shooting and problem solving
- Monthly ward inspections
- Participation in occupational health and safety committee.

Area managers: The area managers are in charge of a section or zone of the hospital. The unit managers or supervisors report to the area manager. Their responsibilities in relation to HCWM include:

- Supporting the unit managers
- Problem solving
- Stock control

c. Unit managers or supervisors

The unit supervisors are responsible for the unit stock records in their sections. They place their orders every two weeks to Stores, receive and check the stock. Their role is to do the following:

- Ensure that sufficient containers are provided to the type of waste they generate
- Ensure that waste is removed from their areas to the central stores
- Discipline the doctors, nurses and general assistants within their areas
- Supervise nursing staff
- Ensure that the proper segregation of waste is carried out.

d. Enrolled and auxiliary nurses

They are expected to segregate waste properly and to seal filled containers and take out new containers as necessary from ward stores.

e. Doctors

They are expected to segregate waste properly. They do not see a role for themselves in HCWM.

f. Laboratory and Blood Bank

The Laboratory and Blood Bank are outsourced and are therefore managed externally. They have made their own arrangements for the management of their waste with independent contracts. The laboratory and Blood Bank are responsible for the safe disposal of what they have generated and manage the supply of their own equipment and removal from the site.

g. Pharmacy Department

The Pharmacy Department is responsible for the purchasing and distribution of pharmaceuticals throughout the hospital. The expired and unused medication is returned to this department. It is the responsibility of this department to ensure its safe destruction and disposal.

h. Cleaning Department

In Leratong Hospital the nursing staff exercise direct control as well as disciplinary supervision of all general assistants, ward helpers, operators and housekeepers within their areas. This is done in cooperation with the senior admin clerk and Snr. Foreman, Mrs. J.M. Motshoaedi.

Senior foreman - Mrs. J.M. Motshoaedi
The senior foreman is in charge of the overall management of all the cleaners. She also has administrative duties relating to attendance registers, annual leave and sick leave. It is also her role to discipline, issue warnings and attend grievance sessions.

She is in charge of all the cleaning materials, from ordering to distribution and use. It is also her duty to ensure that the waste is removed from the wards and placed into the Central Storage Area.

General assistants
Government circular No. 05 of 1996 outlines the responsibilities of the general assistants attached to Theatres, Sterlisation, and Wards. Their duties are diverse: cleaning, packing, restocking, sterilising (in CSSD), serving of food, helping patients, emptying of urine bags and general dusting and polishing.

Specific duties related to waste are the following:

- Changing contaminated linen
- Removing of waste bags
- Controlling of expiry dates (CSSD)
- Providing and changing refuse bags at bedside and waste baskets in wards
- Washing and disinfecting of urinals, bedpans, washbowls, renal bowls, sputum mugs and tooth mugs
- Emptying containers with disposable nappies
- Removing combustion products, excluding human tissue
- Sorting and sealing contaminated linen
- Removing left-overs of food.

Leratong Hospital has issued its own job description for a general assistant with the following waste duties:

- Providing and changing refuse bags and waste baskets in the ward/unit
- Removing of waste bags
- Removing left overs
- Controlling cleaning materials and utensils

The male general assistants are responsible for the removal of the waste boxes.

There is no reference in any document about how job performance will be measured. This makes it difficult to measure the performance of General Assistants and hold individuals accountable for deviations. In addition, the supervision and enforcement of standards is weak.

i. Central Buying Department

The buying department is responsible for procurement of equipment through tendering, selection of quotes, contract writing and ordering of equipment. They conduct quarterly stock counts in stores.

j. Stores

The Stores Supervisor, Mr. Motsusi is responsible for receiving equipment into stock and for the distribution of stock to the wards and departments. He is responsible for the safe and secure storage of equipment.

4. PROBLEM ANALYSIS BY LERATONG HOSPITAL STAFF

The problem analysis was conducted with fifty participants from Leratong hospital who collectively identified their own strengths and weaknesses in the present HCWM system. What follows is a summary of their findings:

a. Strengths

The strength of the present system is that staff recognise a system of waste management in the hospital and that it contributes to keeping the environment in the hospital safe and healthy for staff and patients. Strong elements of the present system were identified as the availability of equipment, protective clothing, some education and in-service training and that a regular system of waste removal is operating.

b. Weaknesses

The weaknesses of the current system were identified for clusters of units across the hospital and details can be found in the supporting documentation. Most of the problems related to the present equipment, procurement of equipment and segregation of waste. Below is a summary of the problems:

- Overfilled sharps containers
- Inadequate design of sharps containers
- Waste is not properly segregated
- Health care risk waste (including needles) is left on the floors and beds
- Overfilled and heavy Buhle boxes
- Poor labelling of containers
- Inadequate internal transportation of waste
- Staff negligence
- Procurement and distribution of enough of the right equipment at the right time.

5. TRAINING AND AWARENESS

Most in-service training at Leratong happens through the Personnel Development Department (PDD) where Sister Ndaba is in charge. Training happens infrequently (once a year) and has focused mainly on general assistants. In-service training mainly targets representatives who then "feedback" to their colleagues. General assistants and all categories of nursing staff have received training on health care waste through PDD and in collaboration with the Infection Control sisters. From March 2002, PDD will coordinate all training in the hospital.

Up to two hundred general assistants are registered with the ABET (Adult Basic Education and Training) programme at Leratong. Administrative staff have their own training officer and committee but the provisioning administrative officer at Leratong reports there is no in-service training for her staff. Allied staff and doctors organise their training through the superintendent. Doctors are required

to get cpd points to remain registered. Nursing management has in-service training on Wednesday. PDD is in a position to organise joint training workshops between different categories of workers at the hospital.

5.1 HCWM training needs at Leratong Hospital

Training on health care waste is facilitated by infection control in collaboration with the service provider. The following table summarises the present training needs with regard to HCWM as identified by Infection Control at Leratong.

Category of health worker	Training needs	Any other comments
General assistants	• Segregation of waste • Types of containers • How to handle medical waste	Buhle training was effective for this category of worker. Need more visual training materials. Buhle video was effective teaching tool.
Nurses	• What is medical waste • Segregation of waste • Types of containers • How to handle medical waste, especially drip sets, sharps and things that they are working with	More visual aids are needed especially video.
Administrative staff	• Segregation of waste e.g. sanitary pads and general waste	
Allied staff	• Segregation of waste • Radioactive waste for staff in x-ray department	
Management	• Over view of all aspects of the system • Procurement	
Infection Control	• Radioactive waste • Information about incineration • Knowledge about other companies other than Buhle Waste • How to measure medical waste and how to know when boxes are too heavy • Issues relating to occupational health and safety • Crisis management and monitoring • Management of the HCWM system	

5.2 Regional short course training programme

The regional short course training programme works very closely with human resource development in the province. At present the province has always provided the training needs analysis and has identified training programmes. The Regional Training Co-ordinator, Ms Shirley Nkadimeng, provides the administration for these programmes.

Health institutions are informed of training opportunities and are then invited to nominate candidates to attend. The CEO of each institution is responsible for the nomination of these individuals. A regional selection committee then decides who will attend the course. At this point, Region A has no training budget for formal short courses. There is no evaluation of personnel once they return from training programmes. The programmes that are available to staff in Gauteng Department of Health fall into the following broad categories:

- Management development programmes
- Professional development
- Training for secretaries and administrative staff
- Support staff training
- Generic skills development.

5.3 Awareness days

At Leratong the infection control sisters organise awareness days. These usually involve three or four stalls in key locations throughout the hospital and entertainment and speeches at the front of the hospital in an area referred to as "Freedom Square." Print media is usually collected from the province for this purpose.

6. INCENTIVES

One of the criticisms of the Department of Health is the lack of incentives. Most key informants for this survey could not think of any incentive scheme in operation and all tended to immediately think of financial incentives. There are no financial incentives presently operating in the public sector. Financial incentives had previously been in operation and were referred to in the focus groups. One participant had this to say:

" *You see, in the past…, if you had gone the extra mile, you would be given an incentive. She (Sister) had a budget for incentives; she'd go to the bank and thank you with some cash. Sometimes you would be told that because you have been working hard that year in September you will receive bonuses. That way you were motivated.* (Nurse, Leratong)

The Khanyisa Awards organised through Gauteng Department of Health do offer some incentive. Leratong has won some recognition for their cleaning department through these awards.

Another focus group participant confirmed that incentives are important but that they don't just have to be financial:

"*I wish we could be acknowledged and appreciated daily. All we get are the Khanyisa Awards twice a year. What about day by day? If someone could just say, "thank you." There is a high shortage of workers and we work hard without being appreciated."*
general assistant, Leratong

7. IMPLEMENTING CHANGE

At Leratong Hospital, change is almost always initiated from the top. Usually a memorandum will come from the region or province. Representatives attending key meetings usually communicate these to staff through a system of "feedbacks". Any significant change will first be discussed with union representatives and then communicated through supervisors to both medical and non-medical staff.

Any administration changes to procedures and contracts are communicated by the provincial tender board.

8. HEALTH CARE WASTE QUANTITIES AND EQUIPMENT

8.1 Types of waste generated at Leratong Hospital

Leratong Hospital segregates waste into the following main categories:

- Health Care Risk Waste (HCRW). This is generally referred to as medical waste.
- Health Care General Waste (HCGW)
- Recycled Items

a. Health care risk waste (HCRW) or medical waste

Health Care Waste Risk Waste is divided into the categories of infectious, sharps, chemical, pharmaceuticals and radioactive. The table below details the types of waste found at Leratong under each of these headings.

Infectious	Sharps	Chemicals	Pharmaceutical	Radio Active
Napkins, swabs, dressings, drip sets, gloves, masks, sanitary pads, bandages, dressings, TB tubes, tissues, enema bags, linen savers, catheters, urinary and suctions dressings, gauzes, oxygen masks, intravenous lines/sets, sputum tissues, nebulisers, soiled old clothes from patients, body fluids, plaster of paris, nebulisers, vaculitres, soiled aprons,	Used needles, syringes, scalpel blades, test tubes, specimen bottles, vials, ampoules, infusion needles, Trocars	Cleaning stripper, Handy Andy, floor stripper, paragon, sodium hypo chloride, solution, non-ammoniated floor stripper, liquid floor polish, double strength liquid soap, drain cleaner, powdered soap, brasso, oven cleaner, jik bleach deodorant block, toilet cleaner liquid and powder, kingstrip, ammonium liquid cleaner, biocide, hair spray, aerosol air freshener, stain spray, Jeyes fluid, biocide, bleach, my-T-strip, my-T-brite, bowl gleam, my-T-steep, oven cleaner (The list is incomplete)	Expired medication, unfinished medication	x-ray films, fixer and developer
Body tissue, body parts, placentas,		Petrol, Diesel, grease cutter,		
Foetuses		Biocide D, g-cide methynol, ethanol, alcohol, ether, hibitane, eusol, savlon. Chlorexidine, formalin, iodine scrub, benzoic tincture, hydrogen peroxide, cidex, ortuozyme, betadine, bicarbonate of soda, haemocarb, acpril, formula 16 lusirane, formalin		

b. General waste

The general waste at Leratong consists largely of the following items: Tissues, food, paper, wrapping, cardboard, cold drink cans and bottles, plastic bottles and containers, plastic bags, discarded documents, peels, bread, envelopes, empty film boxes, empty plastic chemical containers, tea bags, kitchen waste and cigarette ends.

c. Recycled items

Leratong carries out some recycling from certain sections in the hospital. The table below shows the types of recycling carried out in stores, pharmacy, cleaning department and the kitchen with pictures to graphically support the text.

Cardboard	Food	25 l plastic containers
Cardboard cartons are collected mainly from Pharmacy and the Warehouse and stored at the Central Storage area for removal by a contractor	Food waste is collected at the kitchen and placed in 85 l bins for removal by a local farmer. Full containers are stored at Central Storage	Plastic containers are collected at the Central Storage Area. There is no documented collection of these containers.
		

d. x-ray Department

Large envelopes	Silver	x-ray films
The large envelopes and paper from the x-ray department are separated and collected in large boxes. These are removed by Rainbow Waste Paper C.C. 1-2 times per month. There has been no record of removal by Rainbow since the 29th January 2002	The fixer is collected in 25 l containers. D& D Products (Pty) Limited for silver recovery. D & D collect the fixer and films twice monthly.	Old x-ray films are collected in large cardboard boxes for removed by D & D Products Limited for silver recovery
		

8.2 Quantities of waste generated at Leratong

a. Health care risk waste

The following table shows the quantities of risk waste that have been removed from the site by the Buhle Waste. The figures were taken from the signed collection slips that are left at each visit. The figures include the additional quantities of waste in 5 litre sharps and 20 litre specicans from the Regional Midwife Obstetrics units.

Date	5 L Sharps	10L Sharps	25L Sharps	10L Specican	50 L Box Sharps	140 L Container	140 L Special	20L Sharp Special	25L Sharp Special	Total
Apr-02	9	154	0	75	0	991	0	0	0	
Mar-02	3	182	0	77	2	1042	1	0	0	
Feb-02	10	201	0	61	73	1100	4	0	0	
Jan-02	7	204	0	78	47	1306	4	0	0	
Dec-01	12	165	0	78	0	1280	5	0	0	
Nov-01	28	159	0	58	2	1234	3	0	0	
Oct-01	0	194	0	42	0	1287	6	0	0	
Sep-01	0	180	1	68	0	1057	5	0	0	
Aug-01	6	150	3	32	0	1137	9	17	5	
Jul-01	0	91	0	31	13	828	6	19	0	
TOTAL	**75**	**1680**	**4**	**600**	**137**	**11262**	**43**	**36**	**5**	**13842**
Est. kgs.		**4200**			**822**	**168930**	**645**			**170397**
Est. litres	**375**	**16800**	**100**	**6000**	**6850**	**1576680**	**6020**	**720**	**125**	**1613670**
Av. Mth. Kgs		**420**			**82.2**	**16893**				**16975.2**
Av. Mth litres	**37.5**	**1680**	**10**	**600**	**685**	**157660.8**	**602**	**72**	**12.5**	**161359.8**

b. Health care general waste

The following table indicates the number of times that Mogale Municipality has removed the 28 m^3 skip. There is no indication of how full the skip is on removal.

Month	Time	No. of collections	Volume m^3 (28m^3 skip)*	Est. weight @0,25 t/m^3
March 2002	07h55 – 08h50	8	224	
February 2002	08h20 – 10h30	8	224	
January 2002	08h00 – 09h25	9	252	
December 2001	07h55 – 09h50	7	196	

Month	Time	No. of collections	Volume m^3 ($28m^3$ skip)*	Est. weight @0,25 t/m^3
November 2001	08h09 – 12h55	9	252	
October 2001	07h50 – 10h05	9	252	
September 2001	07h45 – 12h04	7	196	
August 2001	07h55 – 11h12	10	280	
July 2001	08h15 – 08h25	6	168	
TOTAL (9months)		**73**	**2044**	

*** These estimates are calculated assuming the skip was full**

c. Comparison between quantities of health care risk and general waste

Comparing the ratio of risk / general waste is difficult as the percentage of sharps and specicans from the external sources that are stored at Leratong cannot be easily separated from the following figures. The comparison ratio for the period from July 01 to March 02 has revealed a possible high percentage of risk waste. There is, however, still an opportunity for savings if segregation is improved.

The table below gives the following estimated figures in volume and weight:

Type of Waste	Volume litres	Volume % of total	Estimated Weight Kgs.	Estimated Weight % of total
Risk Waste collected by Buhle	1,472,595	39%		
General Waste collected by Mogale Municipality (83 x 28 = 2324)*	2,324,000	61%		
Total Waste removed from Leratong	3,796,595	100%		

* There is no way of knowing how full the skip is on removal. The calculations have been made on a full skip.

d. Recycled waste

<u>Cardboard</u>

Rainbow Waste Paper C.C.signs collection notes for the amount of cardboard collected. The table below indicates the quantities collected between 3 November 1999 and 29 January 2002-05-01. There is no record of the weight of cardboard removed from Leratong Hospital.

	Collection Note No	No. of Bags	Loads K4	Bags CMN Mix	Bags F/N	Others
TOTAL		0	26	70	6	0

Food
A local farmer collects the food. There is no record kept of the quantities collected.

25 Litre plastic containers
There is no control over the re-use of the plastic containers. No records are kept.

Large envelopes and paper
No record is kept of the quantities of recycled paper and envelopes.

Silver Recovery
The silvery recovery is the only recycling that generates any money. The table below shows the quantities of fixer and films collected by the contractor.

Silver Recovery				
Date	Fixer litres	D & D g/l	Films kg	Amount Rands
Sub Total 2000	1,794.00	27.00	131.00	4,111.33
Sub Total 2001	7,245.00	91.20	1,017.00	22,823.39
Sub Total 2002	2,355.00	23.40	452.00	3,942.80
Total	9,600.00	114.60	1,469.00	26,766.19

8.3 Present costs of equipment and service

The purchasing is done by the Buying Department either through a provincial contract or by three quotes. The table below shows the figures obtained from the tally sheets in the Buying Department.

a. Buying Department tally sheets

Item	Book Year	Quantity	Average monthly Usage	Estimated current Unit Price	Estimated Annual Cost in R
Transparent plastic	1999/00	26150	2179	0.52	13,598.00
	2000/01	26350	2195		13,702.00
	2001/02	26750	2229		13,910.00
Red plastic	1999/00	32810	2734	0.68	22,310.80
	2000/01	39440	3286		26,819.20
	2001/02	31880	2656		21,678.40
Black plastic	1999/00	21660	1805	0.63	13,645.80
	2000/01	31140	2595		21,175.20
	2001/02	32000	2666		20,160.00
Waste Boxes, lids and plastic	2001/02	10317	860	31.10	**320,858.70
10 l sharps containers	2001/02	?	107	41.94	*53850.96
10 l specican and lids	2001/02	275	?	41.94	11,533.30
Sealing tape	2001/02	?	117	17.05	*23,938.20
Estimated Annual Cost					

? = This figure does not tally with the number of units removed by Buhle (275 and 525). This could be an indication of the extra quantities that are stored by the Midwife Obstetrics units.
** = Annual figures not available – estimated on latest monthly figure*
*** = The waste boxes distributed by buying dept. and those removed by Buhle differ by only 56 which could easily be the amount in the internal stock rooms. It is, however, difficult to reconcile this figure, as it is not known how many waste boxes are stored by Midwife Obstetrics units.*

b. Buhle waste collections

The table below shows the number of collections done by Buhle Waste over the past 10 months. The costs have been estimated by using the costing schedule from Buhle Waste.

LERATONG HOSPITAL - SUMMARY OF HEALTH CARE RISK WASTE REMOVAL – COSTS

Month	5 L Sharps	10L Sharps	25L Sharps	10L Specican	50 L Box	140 L Container	140 L Special	20L Sharp Special	25L Sharp Special
Apr-02	9	154	0	75	0	991	0	0	0
Mar-02	3	182	0	77	2	1042	1	0	0
Feb-02	10	201	0	61	73	1100	4	0	0
Jan-02	7	204	0	78	47	1306	4	0	0
Dec-01	12	165	0	78	0	1280	5	0	0
Nov-01	28	159	0	58	2	1234	3	0	0
Oct-01	0	194	0	42	0	1287	6	0	0
Sep-01	0	180	1	68	0	1057	5	0	0
Aug-01	6	150	3	32	0	1137	9	17	5
Jul-01	0	91	0	31	13	828	6	19	0
TOTAL	**75**	**1680**	**4**	**600**	**137**	**11262**	**43**	**36**	**5**
Estimated Cost	1,665.00	70,459.20	379.96	25,164.00	3,574.33	350,248.20	1,337.30	3,419.64	110.10

Estimated savings at 15% reduction through better segregation

	Cost	Litres
10 mths	R456,259	1,613,670
Estimated saving @15%	R 68,438	242,050
Estimated totals	R366,259	1,589,465

(This amount can only be estimated, as further investigation will be required to establish the amounts of risk waste stored by the obstetrics units.)

Estimated monthly usage of Buhle items as recorded by the Buying Department

The table below records the bi-weekly consumption of consumable items as estimated by the buying department.

Section	Boxes	Tapes	10 l Sharps *	10 l Specican
Ward 1	10	1	3	
Ward 2	2		1	
Ward 3	60	4	4	
Ward 4	80	4	4	
Ward 5	50	4	4	
Ward 6	50	3	10	30
Paeds ICU	10	1	10	
Adult ICU	20	2	10	
Ward 20	20	2	1	
Ward 11	20	2	5	
Ward 19	20	2	8	
Ward 24	15	1	14	
Ward 17	10	1	14	
Ward 21	20	2	6	
Foyer	7	1	14	
Poly Clinic	10	1		
Casualty	40	4	14	
Ward 25	12	1		
Theatre	120	12	20	
x-ray	20	2		
Phisio	6	1		
Mortuary	2	1		
Renal	40	1	7	
TOTAL	**678**	**53**	**149**	**30**

* This column was incomplete – red figures indicate estimates from the individual wards.

8.4 Containerisation of health care waste

A variety of disposable and re-usable containers are used to collect both risk and general waste. During the survey the individual collection points in each unit were identified and recorded (see supporting documentation). The total number of collection points for risk and general waste is shown on the table below:

LERATONG HOSPITAL

		7 days		Health Care Risk Waste														General Waste					
		Sharps	140 l boxes	5 lt sharps	10 lt sharps	25 l sharps	50 l sharps	10 l specican	12 l pedal	12l other	Transp. Liners	140 l box	trolleys with	Injection trolleys	Blood/ Gas trolleys	Spinal Trolley	Drs Trolleys	Kickabout trolleys	12 l basket	12 l pedal	8 - 20 l plastic	8-20 litre 'other'	110 Black GW Bin	TOTAL
TOTAL		91.3	345	0	78	0	0	3	54	23	54	39	12	10	4	8	4	36	76	165	41	44	49	592

a. Health care risk waste (medical waste)

Risk waste is collected in a number of ways at the point of generation and in internal storage areas.

Disposable containers

The disposable containers used for the collection of risk waste are: 2 sizes of sharps containers, a specican and two sizes of cardboard boxes. The sharps containers do not have liners. A red liner is used inside the cardboard box. If containers are not available, transparent and coloured liners are hung from brackets or racks.

- 5 litre sharps containers (In the central storage area from Obstetrics)
- 10 litre sharps containers
- 10 litre specican
- 140 litre cardboard box (the 50 litre boxes removed from the site are from the external Obstetrics Department who use the central storage area at Leratong)

Sharps containers

5 litre sharps containers are not used at the hospital. Quantities of this size are stored by the external Midwifery Obstetrics units.

Dist. = The number of distribution points surveyed
Est. Use = the estimated usage by the unit for 7 days (used for keeping stock records)

Container	Dist.	Est. Use	Examples of usage		
10 litre sharps This sharps container is used extensively throughout the hospital. Containers are hung from brackets, placed on trolleys, tables, floor and inside special brackets supplied by Buhle.	78	91	Sharps hanging from a bracket in a ward 	Sharps standing on recovery trolley in Theatre 	Sharps on bracket in Casualty 

Comment on sharps containers

Buhle Waste C.C supplies sharps containers. When purchasing the containers, the hospital also pays for the service of collection, transportation and treatment.

Positioning: *There are rectangular brackets positioned throughout the hospital for a different size of container from a previous service provider. The positioning of sharps containers does not lend itself to easy and safe disposal of sharps. They are sometimes located on the bottom shelf of the doctor's or nursing trolleys or they are positioned too high on top of the recovery trolley. The containers are mounted only in the Casualty Department. The travel distances are too long, particularly in Casualty.*

Sizes: *The hospital is presently using only one size of sharps container, although they have in the past used both the 5 litre and the 20 litre sharps container. The 10 litre container is very well suited to the Medical, Surgical, Labour, Theatre and ICU areas where it can be filled in 1-2 days. In the other areas is takes a lot longer to fill and in Physiotherapy, for example, the same container is kept for 1 year. The containers fill quickly in ICU where 200 ml bottles are deposited into the sharps container. No provision is made for trocars and other tall items.*

Shape and construction**:** *The round shape does not facilitate easy storage and placement. The opening at the top is difficult to use and does not allow the sharps to lie flat. The lids are sometimes ill fitting or a different size lid is provided.*

Recommendations

Construction	*Usage*
▪ *A square or rectangle shape is easier to position and store* ▪ *Opening that allows the sharps to lie flat* ▪ *A mark / window to indicate maximum quantity* ▪ *Securely fitting lids*	▪ *Size according to need* ▪ *More accessible placing* ▪ *Secure (bracket where possible)* ▪ *Investigate separating the needle from syringe*

Specicans for anatomical waste

Specicans are available from Buhle Waste in three sizes. During the survey only the 10 litre size was used. The kick-about trolley is used in theatre for infectious waste and tissue.

Container	Dist.	Est. Use	Examples of usage	
10 litre specican (anatomical waste) This container is used for placentas and is found in two areas, Labour Ward and OPD. Use is also made of the kick-about trolley with a liner for placentas and other tissue waste in Theatre, Labour, Renal, ICU and Casualty.	3	21	Kick-about trolley 	Kick-about with red liner in Theatre 

Comment on specicans used for risk waste

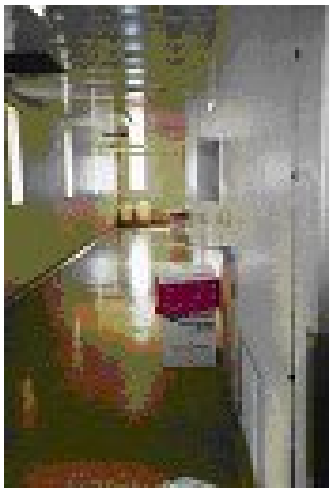
The specicans are only used in Maternity and OPD. The kick-about trolley serves a useful purpose in ICU, Theatre, Casualty, Renal and Labour as they are easy to maneuver and one is dedicated to each patient. They are not always used with a liner.

Recommendations

Construction	*Usage*
▪ *Leak proof, rigid container* ▪ *Securely fitting lids*	▪ *Size according to need* ▪ *Preferable to be single use* ▪ *Kick-about must be used with a liner*

Cardboard boxes for infectious waste

Buhle Waste also supplies the cardboard boxes with the cost of collection, transport and treatment built into the cost of the container.

Container	Dist.	Est. Use	Examples of usage	
50 l cardboard box Examples of this size were not seen during the audit.	?	?	Boxes the Sluice Room	Cardboard boxes in the Theatre dirty corridor.
140l cardboard box This is the main container used for infectious waste (not sharps). It is used throughout the hospital and although it is used in some sections at the point of generation, it is generally found only in the sluice rooms.	39	345	 Box in use in Renal 	

<u>The nursing (dressing) trolley</u>
The trolleys are widely used throughout the hospital. There are different types of trolleys used for different applications. The injection and doctor's trolleys usually have the dedicated usage. The nursing (dressing) trolley is used for more general applications such as changing dressings, injections, and other routine patient care applications.

All the trolleys are used with either a red or transparent liner tied to one end. The liner is used to discard soiled dressings, dressing wrapping and swabs. The sharps containers are large and usually positioned on the bottom shelf.

Trolley	Dist	Examples of Usage
The injection, blood, nursing and doctor's and spinal trolleys are all used with a liner (red or transparent) tied to one end and the sharps container on the lower shelf	38	   

Comment on the nursing (dressing) trolley

The self-contained trolley with sharps container and waste disposal as one unit supports the principle of disposal at generation point. The risk waste can be safely disposed of without risk to patient or worker. However, the practice of tying the bags to the side does not allow easy access to the opening. The liners used are not of suitable micron and they are unprotected from contact.

The sharps containers are difficult to access on the bottom shelf.

Packs with a dedicated adhesive red disposal bag inside are not used at the hospital. Open dressings from each patient are collected inside the red liner. The question of whether this practice supports the standard infection control measures (universal precautions) will need further investigation.

Recommendations

Construction	*Usage*
▪ *Design trolley to have a disposal container / liner fixture that is both safe and efficient* ▪ *Ensure easy accessibility, protection and stability*	▪ *Investigate means for improving standard precautions used e.g. the use of dressing packs with dedicated disposal bag*

b. General waste

Re-usable Containers for General Waste

General Waste is collected in the same variety of re-useable containers that are used for risk waste. The containers and liners used are interchangeable between risk and general waste. Where containers are not available, liners are hung from available brackets, racks or hooks. Cardboard boxes are also used with liners for the collection of general waste

85 litre black rubber dustbins are positioned throughout the hospital and are usually fitted with a black liner.

85l Black Bin	Dist.	Examples of usage		
The 85 l black bin is scattered throughout the hospital and is found at the point of generation (Pharmacy), in the Sluice Room, hospital grounds and other strategic points	49	With risk waste in the Sluice Room 	In the Theatre dirty corridor 	In ICU 

Disposable liners: general waste
Two sizes of disposable liners are used for general waste:

- 720 x 950 mm < 30 micron black liner
- 600 x 500 mm < 30 micron transparent liner

Liner	Examples of usage		
600 x 500 transparent liners This liner is also used extensively in wire baskets, pedal bins, plastic and metal bins and cardboard boxes. It is used for both risk and general waste.	Pedal bin for general waste 	Wire basket with liner for general waste 	General waste bin with transparent liner 

Liner	Examples of usage	
720 x 950 black liner This liner is used sometimes on the nursing trolley when transparent liners are not available. For general waste, they are hung from a bracket on the wall. It is also used with wire baskets, pedal bins, metal and cardboard containers**.**	Inside cardboard box  Inside plastic container 	Hanging on bracket on wall  Over wire basket 

<u>Comment on containers and liners used for general waste</u>

Pedal bins: *The pedal bins are used extensively for the collection of general waste. The condition of the pedal bins varies from section to section. New stainless steel pedal bins are used in the Burns Unit while in other cases where the bin has deteriorated beyond use, the inside container alone is uses as a bin. Several of the pedal bins have been condemned but have not yet been replaced.*

Other bins: *The square metal bins are generally in average condition. Some of the wire baskets are badly bent. The plastic containers are for the most part in reasonable condition. Where containers are not available cardboard boxes are used with different coloured liners.*

Liners: *The availability of liners is generally good. Some units have recently experienced difficulty in obtaining the red liners and have been using the white linen liners or transparent liners instead.*

The same comments on type, size and quality of liner for risk apply also for general waste. The micron can be less for general waste, but must still be strong enough to hold the anticipated weight.

Recommendations

Construction	*Usage*
Liners ▪ *Use liners of the correct size for the container* ▪ *Use liners of the correct micron and density to carry the volume and weight of general waste* ▪ *Determine correct specifications for tendering*	▪ *Dedicate a colour for general waste* ▪ *Use correct size liner inside the containers* ▪ *Have a secure fastening method for liners* ▪ *Use the correct size and colour of liner*
Containers ▪ *Standardise on type, size and quality of bins* ▪ *Ensure durable construction with a lid* ▪ *Condemn all rusty and damaged pedal bins* ▪ *Supply good quality bins where tins, boxes and broken plastic bins are used*	▪ *Allocate the sizes according to need* ▪ *Place containers close to the point of generation*

8.5 Storage areas

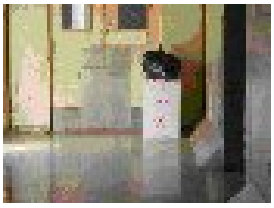
a. Intermediate storage area for waste

There are several intermediate storage places for the full containers awaiting transportation to the central storage area. Some areas do not have a dedicated area. In the ward areas, the sluice rooms are generally used for this purpose. The cardboard boxes are sealed with tape, marked with the unit number or name and transported to the public corridor to await transport to the central storage area. The full black bags are closed with a knot, sometimes marked with a sticker and placed together with the cardboard boxes. The full sharps containers are closed and placed in the sluice room to be taken separately down to the central storage area.

Intermediate storage areas are: Sluice Rooms, 'dirty corridor', passage way and veranda.
The following areas do not have a separate intermediate storage area:

- Warehouse (Stores)
- Pharmacy
- Physiotherapy
- Kit Room
- Occupational Therapy
- Renal Unit
- Kitchen
- Mortuary
- Security

Examples of intermediate storage areas:

Dirty Corridor	Sluice Room	Corridor	
Showing small door from Theatre to dirty corridor 	Ward 	Outside Ward 	At stairway 

Comment on intermediate storage areas for waste

In most areas the intermediate storage for waste is unsuitable. With the exception of the Theatre 'dirty corridor', the areas are cluttered and used for other purposes such as sluicing of linen and washing equipment. The practise of leaving waste in the passageways is not entirely acceptable as the general public has access to it. However, the routines for collection are good and they are removed by mid morning. The areas without any storage area leave their waste boxes in unsuitable places.

Recommendations

Construction	*Usage*
▪ *Investigate alternative places for the intermediate storage of waste that is both secure and well ventilated.*	▪ *Ensure good housekeeping practises are maintained at all times.*

b. Internal storage for equipment

New equipment is kept in several places within one area. The equipment can be found in the Store Room, Medicine Room and General Room. The liners, boxes and containers are seldom found in the same room. Some of the areas do not have a dedicated storage place.

Examples of internal storage for supply of equipment:

ICU	THEATRE
On the bed in an unused cubicle 	Housekeeping below standard 

Comment on the storage of new equipment

The storage of new equipment is very haphazard and the housekeeping standards are poor. Generally the storage space is inadequate for the needs of the unit although on several occasions, the stock levels found are way in excess of their needs. Some of the equipment is kept under lock.

Recommendations

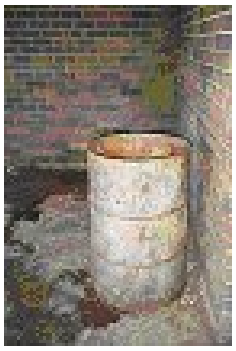
Construction	*Usage*
▪ *Investigate a dedicated place for the internal storage of new equipment.*	▪ *Ensure good housekeeping practices are maintained at all times.* ▪ *Ensure better stacking and storage practices*

c. Central Storage Area

The Central Storage Area is situated at the bottom end of the site. It is a brick building with a ramp providing easy access with a trolley into the room. There is ample storage space and the area is kept clean. The cardboard boxes are stacked in the main area. There is a smaller room leading off from the main area where cardboard is collected for recycling. The food waste is at the opposite end of the area.

The general waste is stored inside a 28 cubic metre skip situated outside the main brick building.

Central Storage Area

Outside	Inside			Skip
Building  **Access by ramp** 	Storing waste boxes  Storing sharps 	Storing cardboard boxes 	Food storage area  	Access to the skip  28 m^3 skip 

Comment on the Central Storage Area

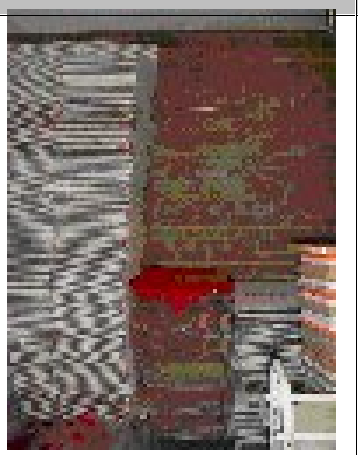
The central storage building is well ventilated and there is easy access for the trolleys. There is ample space to store equipment. There is no security around the storage area. The area is generally well maintained. However, hygiene around the food storage and outside the skip area could improve.

Recommendations

Construction	*Usage*
▪ *Improve security* ▪ *Investigate installation of refrigeration*	▪ *Ensure good housekeeping and hygiene practices are maintained at all times.*

d. Warehouse (Stores)

The Warehouse keeps the stocks of all the equipment needed for the waste management system. The stock levels are well documented and the procedures for ordering from the stores are clearly defined.

Stock of cardboard boxes	Stock of sharps containers	Cleaning Chemicals
		

Comment on the Warehouse (Stores)

The housekeeping standards in the chemical store are good. The security arrangements are also good. The general store area is cluttered and stacking and storage practices are poor and this , increases the risk of injury. Access to the equipment is obstructed by other items of stock.

Recommendations

Construction	*Usage*
	▪ *Ensure good housekeeping practices are maintained at all times.* ▪ *Ensure good stacking and storage practices are maintained.*

8.6 Transportation of health care waste

a. Internal transportation of waste

The waste boxes are dragged, carried or transported on any available trolley to the corridor. The black liners are removed from the black bins, knotted and taken by the cleaners from the sluice rooms or other areas to the public passageways for collection according to a pre-determined roster.

Waste boxes, bins and plastic bags are transported internally on a 1 x four-wheeled steel trolley. Wire is used on the sides of the trolley to prevent the waste from falling out. All four wheels are connected and can all turn, making it easy to maneuver and efficient. A green four-wheeled wheelie bin is also used.

Trolleys used	**Four wheeled trolleys**	
From sluice to corridor  From ward to Central Storage 	From corridor to central  	Four wheel turning mechanism 

Comment on the internal transportation of waste

There is no suitable means of transporting the boxes and bags from the sluice rooms and there is a high incidence of manual handling of waste. The condition of the four wheeled, flatbed trolley is poor. The habit of transporting the risk and general waste together and piled high, is not good practice.

Recommendations

Construction	*Usage*
▪ *Investigate alternative means of transporting the waste.*	▪ *Separate the risk waste from the general waste* ▪ *Apply good loading and stacking practices*

b. External transportation

Risk waste
There is a contract with Buhle Waste to take the risk waste off the site. The boxes are manually handled and loaded into the back of a small truck. The sharps containers and specicans are placed with the boxes. Buhle Waste takes the waste either to Pikitup, Sanumed or transports it to Klerksdorp for incineration.

The transportation truck	
	

The scope of this survey did not include an investigation into the waste management standards of the service provider. This will be done as part of the Service Provider Pilot Project.

General waste
The Skip is removed and replaced with a new one by the Mogale Municipality truck.

Treatment of waste
There is an incinerator on the site that has officially been closed down since June 2001. The facility consists of a diesel fired, dual chamber incinerator located in the same building as the hospital's boilers. The incinerator is owned by the Department of Public Works and has two chambers each with one support burner. There is a 15-meter high smoke stack that is lower than the boiler chimneys.

Since July 2001 the risk waste has been treated off site with incineration and the ash taken to a landfill. The Municipality takes the general waste to the landfill site.

Protective Equipment
Protective equipment such as boots, gloves, masks and aprons are readily available from the Dry Dispensary Department. No record is kept for the issue of protective equipment.

All the female general assistants wear the green cleaning uniform with a plastic apron.

Re-usable yellow gloves are issued to them to use when cleaning and handling waste. Clear Latex gloves are also frequently worn. The male general assistants wear two-piece grey uniform and long red or yellow re-usable gloves when transporting the waste. Female and male porters wear powder blue and navy uniform.

Sterile and non-sterile Latex gloves are readily available in all the areas for nursing staff and general assistants. Glasses and plastic aprons are worn where splashes can occur.

9. HEALTH CARE WASTE MANAGEMENT CONTROL SYSTEMS

9.1 Existing health care waste procedures

a. Procurement procedures

- Central Buying Department: This Department handles the ordering and payment of equipment required for waste management. Requests for containers and chemicals are received on a VA2 form from the departments.

- Pharmacy Department: This Department is responsible for the ordering of all Pharmaceutical Drugs through the Depot. A request for drugs is received from the Departments on a VA2 form. Payment is made through the Central Depot in Auckland Park.

- Dry Dispensary Department: This Department is responsible for the ordering of protective equipment. Requests for gloves, glasses, aprons, and masks are received on a VA2 form.

- Stores Department: This Department is responsible for the storage and issue of containers and cleaning chemicals. On receipt of a signed and stamped VA2 request form, the equipment is issued. Equipment may be ordered every two weeks on a pre-determined roster.

<u>Waste equipment</u>
The Buying Department manages the contract with Buhle and the plastic liner supply companies. No specifications are used for the purchasing of the liners and it is the Buying Department that decides entirely on its own, what quality of liner to purchase.

There is a well documented system for the ordering of equipment from Buhle and for the ordering of liners. A VA2 form is filled in by the chief user clerk or the unit manager and signed by the area manager or supervisor. It is then forwarded to the Buying Department for entering onto the tally card. Once the VA2 is stamped by the Buying Department, the Stores Department issues the equipment. The stock levels in the Warehouse are monitored by the Buying Department.

Chemicals

The selection of the supplier for cleaning chemicals is done following the normal three-quote system. No specifications are used for the purchasing of cleaning chemicals and the Buying Department decides what type of chemicals will be used. No data sheets are obtained from the supplier.

The ordering of cleaning chemicals is carried out by the Cleaning Department in the same way as the ordering of waste equipment outlined above.

Pharmaceuticals

Pharmaceuticals are ordered every two weeks on a Tuesday from the Medical Supplies Depot (situated in Auckland Park) of the Department of Health. The order is received a week later and two different order systems are used:

- Direct Ordering: This is for coded items - Green card - and are stocked at the Depot.

- Indirect Ordering: This is for non-coded items - Pink Card - special requests from the doctors that are not stocked at the Depot.

The ordering procedure involves completing a Z 84 A (pink card) and a Z84 (ordering form). These are sent to the Medical Supplies Depot. The item is ordered by the Depot and delivered by the supplier.

The wards request stock from the Pharmacy using a VA2 form. The supervisors of the wards are responsible for their stock levels.

Auckland Park follows a 3-quote system to obtain the item. (Three quotes for the required item are requested. The quotes are reviewed using a point system and a comparable quoted price is quantified. Quotes are then selected on the lowest comparable quote.)

Unit ordering procedures

Each unit has a Requisition/Issue/Receipt Voucher – VA2 form signed by the Charge Sister and approved by the Area Manager. It is taken to the Buying Department for an approval stamp and the stores then issues the equipment. Receipt of goods is documented on the same form.

Ordering takes place every two weeks on a Monday. The Roster - Stores Orders 2002 is posted in every unit with the pre-determined dates listed.

The ordering of plastic liners is done through the Cleaning Department using a numbered book. The quantities are counted out by the Cleaning Personnel. On a bi-weekly basis, the Cleaning Department replenishes their stock from Stores using the VA2 form.

The Charge Sisters are responsible for the stock kept in the units. There is no stock limit.

Medical supplies
The same procedures for ordering of medical supplies are used. The Dry Dispensary issues the stock.

b. Waste stream procedures

There are no documented procedures for segregation, colour coding and containerisation other than the notices displayed in the units

Segregation, colour-coding and containerisation
Segregation has been practiced in the hospital for a number of years. The hospital has experienced several changes from using plastic liner system to boxes and back to plastic liners when the incinerator was repaired. When the hospital incinerator was closed in June 2001, the cardboard boxes were re-introduced.

Buhle Waste supplies white cardboard boxes with the hazard logo and a red liner and lid, for infectious waste. Once full, the boxes are sealed with tape. Specicans (10 litre and 20 litre sizes) are also supplied for placentas and other human tissue.

The hospital has no written policy or procedure for segregation and the correct use of the containers. Buhle Waste issues a single sheet with the heading 'Attention' and is addressed to all staff members. It outlines *"10 points on the correct use of the boxes and sharps containers".*

Posters and circulars are available which show the colour-coding system of the following:

- Black bags for domestic waste e.g. kitchen waste, peels newspapers, flowers, tins cans.
- Red bags and Medical Waste Box for Medical Waste, i.e. disposable nappies, sanitary pads, linen savers, drip sets, swabs and gloves.

There are no written procedures for the disposal of sharps into the sharps containers.

c. Collection, transportation and storage

There are no written procedures for the collection, transportation and storage of waste.
All types of waste are collected from the units and stored on the west end of the site. There is a 28 cubic metre skip for the general waste. Pig's swill, sharps containers, filled risk waste cardboard boxes and flattened cardboard boxes are stored inside a brick building.

Internal - to Central Storage
The General Assistants are responsible for removing the waste from the internal storage places to the corridor and finally to the Central Storage Area. A four-wheeled trolley is used to transport the boxes, bags and bins from the corridors to the Central Storage Area. There is a documented work schedule for the

cleaners detailing the times for collection and transportation to the Central Storage Areas.

External - from Central Storage
The external transportation of risk waste from the site prior to the closing of the incinerator was done by Skip Waste and only covered the removal of sharps and speci containers. An amendment to contract GT 1059 MI for the disposal of medical waste from 1 April 2000 to 31 March 2003, was circulated in June 2001. A copy of the contract was requested from Buhle.

Buhle Waste collects the risk waste from the Central Storage Area daily. A dated collection slip recording the number, size and type of containers is filled in by the driver and countersigned by a hospital employee. These slips are sent to the Administration Department. See details of quantities under 'Types of Waste Generated and Quantities'.

General Waste
The Mogale City Local Municipality removes the 28 cu metre bulk container every 2 – 5 days usually between 08h00 and 10h30. A numbered collection slip is filled in with date and time of collection. The Cleaning Department sends these slips to the Administration Department for filing.

Food
Mr. F.J. Brink has a contract to remove the kitchen waste food. The contract has expired

Cardboard boxes
Rainbow Waste Paper collect the folded cardboard boxes and use a numbered and dated collection slip marking how many bags or loads were collected. The Cleaning Department sends these signed slips to the Administration Department for filing.

Plastic containers
There is no formal removal of the plastic containers.

d. Disposal procedures

There are no formal documented procedures for the disposal of waste other than some notices that are displayed in some of the areas.

Sharps / Infectious Waste
Sharps and infectious waste is incinerated at an external facility.

Chemicals
There are no documented procedures for the disposal of chemicals. All chemicals are thrown down the drain, except for the procedures followed by the X-Ray Department for the collection of fixer for retrieving silver.

Pharmaceuticals
There is a written procedure for the disposal of expired and damaged medicines (SOP 13 DSM). Expired drugs are written off by filling in a VA2 (Out of Stock)

form and a VA 27 (Board of Survey) form. The Sr. responsible for the stock identifies expired stock and will initiate the condemning process. The form VA 27 is handed to the Pharmacist, who signs the form as proof of receiving.

Schedule 7 Substances Procedure is recorded in the TPH 37 register and the Pharmacy Schedule 7 Register. The Pharmacist then completes a VA 27 form in triplicate and sends to the inventory clerk who assigns a condemning number. The Pharmacist notifies the inspector at Head Office for authorisation to destroy.

Previously, expired stock was destroyed in the incinerator at the hospital. Now the procedure is to store the stock in a 140 litre cardboard box to await removal by a hazardous waste company.

Radioactive

The Laboratory is contracted out and they have an independent service provider to remove their waste. The survey did not cover their documented procedures, although the area was visited to ensure that disposal is well managed.

e. Infection control standards

There are no documented infection control guidelines or standards. Notices, flyers and posters are used to communicate the standard (universal) precautions, hand washing and cleaning routines. However, the Infection Control Department is actively involved in the reporting and recording of communicable diseases, TB, and HIV/AIDS incidents that are reported. Every unit has a book for recording communicable diseases and the statistics for the hospital are kept in the Infection Control Department. There is a procedure for the administration of prophylactic treatment when a needle stick injury occurs. There is no formal immunisation programme in place for Hepatitis or TB. The hospital staff was last immunised against Hepatitis in 1999. Nosocomial diseases are reported and followed up by the department. Laboratory reports are seen on a daily basis and followed up.

f. Occupational Health and Safety Procedures

There are no documented occupational health and safety procedures. The committee meets regularly and minutes are kept.

g. General hygiene and cleaning routines

The procedures for cleaning are superficially detailed as:

- Sweep and mop the floor
- Dust the window sills
- Scrub the floor
- Empty the dust bins
- Clean the glass doors.

There are no written procedures for how to clean, use cleaning chemical, how to wear protective clothing or work with hazardous waste. No colour-coded system is used.

h. Issue of protective equipment

There is no written standard for the identification, provision and use of protective clothing.

The Dry Dispensary issues protective clothing on presentation of a signed and stamped internal request voucher VA 2 form.

Latex gloves, masks, caps, shoe covers, theatre gowns and other universal protective clothing is freely available in all the units.

Glasses are controlled by Pharmacy and issued to a doctor on request. The glasses must be returned when he / she leaves.

Household long yellow Latex gloves are issued to the general assistants. On production of the old, damaged pair, they will receive a new one. There are no written standards for the replacing of worn gloves. The general assistants are not supposed to use the Latex gloves.

i. Incident reporting procedures

There is no written procedure for the reporting of incidents at work other than needle-stick injuries. The Occupational Health and Safety Department handle the reporting and investigation of incidents. There is an internal incident report and investigation form that is used for major injuries.

- Injury incidents are recorded on the WCL1 and WCL2 Compensation Report forms that are submitted to the Compensation Commissioner.

- Needle-stick injuries are to be reported to the Head of the Department who is required to keep records in a book. The reporting of needle-stick injuries and the administration of AZT treatment is clearly laid out. Both the patients' blood (with consent) and the injured person's blood is tested. AZT 200 mg/p.o. and 3TC 150 mg p.o. is administered 4 hourly until HIV results of the patient are available. Tests are taken every two months for 1 year after the injury. Counselling and guidance is given if the person tests HIV positive.

The Occupational Health and Safety Committee do investigations and keep records of all major injury incidents. Needle-stick incidents are not investigated.

j. Occupational health

There is no formal occupational health programme in place. No monitoring for exposure to airborne substances is carried out. There is also no formal immunisation programme in place for exposure to communicable diseases. No baseline monitoring is done for new or student employees.

k. Disaster planning

There is a Disaster Committee in place with a documented plan.

l. Inspection and auditing standards

There are no documented auditing and inspection procedures in place. The Infection Control Department conducts monthly checks on hygiene and reporting. The Occupational Health and Safety Committee are appointed and Health and Safety Representatives reporting structures are in place.

There are no formal management inspections and audits standards documented.

9.2 Existing health care waste management routines

a. Procurement procedures

Routine issue of equipment, cleaning chemicals and protective equipment
The Buying Department, through the Warehouse (Stores) issues a schedule at the beginning of each year with the day and date that equipment may be ordered using the VA2 form.

Period: January - June		**Period: July - December**	
Monday	7 January	Monday	8 July
Monday	21 January	Monday	22 July
Monday	4 February	Monday	5 August
Monday	18 February	Monday	19 August
Monday	4 March	Monday	2 September
Monday	18 March	Monday	16 September
Monday	2 April	Monday	30 September
Monday	15 April	Monday	14 October
Monday	29 April	Monday	28 October
Monday	13 May	Monday	11 November
Monday	27 May	Monday	25 November
Monday	10 June	Monday	9 December
Monday	24 June	Wednesday	18 December

Routine issue of medicines and drugs
The Pharmacy is responsible for the storage and issue of all drugs on receipt of a signed request form (VA2). No specific time schedule is used.

Control of stock levels
The unit supervisors and area manager are jointly responsible for the level of stock kept in their sections. There is no stock limit set and the supervisors must ensure that they have sufficient stock on hand for two weeks supply. Ordering is done in some units through a chief user clerk.

Routines for the transportation of waste
The general assistants within each section are responsible for the transportation of the waste from the intermediate storage areas to the passageways.

The male general assistants have the duty of transporting the waste boxes and bins to the Central Storage Area using the four-wheeled trolley. The senior foreman of the Cleaning Department is responsible for establishing the roster for the transportation of waste to the Central Storage Area.

The timetable for waste collection is summarised in the table below:

Groups	7h00 – 9h00	13h00 - 14h00	15h30 - 18h00
Group A **Ground Floor**	Foyer Pharmacy Admissions Casualty OPD OOPD Ward 25 X-Ray Kit Room Physiotherapy	Wards 1 & 2 Wards 7 & 8 Ward 14 Wards 19 & 20 Stores	Renal Unit Laboratory Doctor's Night Quarters Wards 3 & 4 Wards 9 & 10
Group B **First Floor**	Doctor's Night Quarters Laboratory Renal Unit Wards 3 & 4 Wards 9 & 10 Wards 15 Wards 21 & 22	Wards 3 & 4 Wards 5 & 6 Theatre Ward 20	
Group C **Second Floor**	Theatre Wards 5 & 6 Wards 11 & 12 Ward 17 Ward 23 & 24		Theatre Ward 5 & 6 Ward 11 & 12 Ward 17 Wards 23 & 24 Stores Nurses Home Wards 19 & 20 Ward 14 Wards 7 & 8 Wards 1 & 2

The Kitchen is responsible for the collection of left over food for pigswill and the transportation of the bins to the Central Storage Area.

Control of Central Storage Area
The Cleaning Department is responsible for the safe storage of the waste at the Central Storage Area. They must ensure that it remains clean and that a pest control system is in place.

There is a 28 cu metre skip for general waste. Food bins, cardboard boxes, sharps containers and recycled cardboard are stored inside the brick building. Plastic containers from cleaning chemicals are stored on the side of the building.

Routines for the removal of waste from the site
Buhle Waste CC collects risk waste, under contract, 3-4 times a week. No definite time is set. Collection slips are filled in on collection.

The Municipality collects general waste approximately every 5-7 days. They usually come between 7h00 and 12h30. The times for collection of food are not known.

Compliance with procedures
The procedures and routines for the procurement and ordering of equipment are well documented and carried out regularly. The ordering roster is displayed in all the units and the staff is well aware of the dates on which orders must be made.

Waste equipment is supplied regularly and the stock levels are well maintained at the moment. Previously there have been problems with low stock levels, and this has led to the unit manager losing confidence in the supply process. The result has been overstocking at ward level.

The stock levels of containers and boxes within most areas are in excess of their bi-weekly requirements. In Theatre these levels are exceptionally high. The heads of departments historically do not have confidence in the maintenance of stock levels by the Buying Department and therefore prefer to maintain a high level within their departments in case of a shortage. However, Ward 22 and Ward 14 are under stocked.

The system for the ordering of plastic liners from the stores is more difficult to trace. The units use a numbered book to order their requirements through the Cleaning Department who distribute the amounts requested. The red and black liners come in packs of 20 and the transparent liners have to be counted out into packs of 20 by the Cleaning Department. Every two weeks, as per the roster, the Cleaning Department place an order for 1000 plastic liners for distribution to all areas.

Red plastic liners were allowed to run to nil on 18th March. The Buying Department made a decision, without consulting the hospital staff, to discontinue the use of these liners.

Senior management has addressed the matter and in future all equipment required for the waste management system is to be referred to the Infection Control Department. The liners have now been ordered but by 23 April, the order had not yet been fulfilled.

The ordering of pharmaceuticals is well managed by the Pharmacy staff. Stock levels in the units are small.

Supply of cleaning chemicals is well managed. The Cleaning Department does the bulk ordering from the Stores and some decanting takes place locally.

b. Waste stream procedures

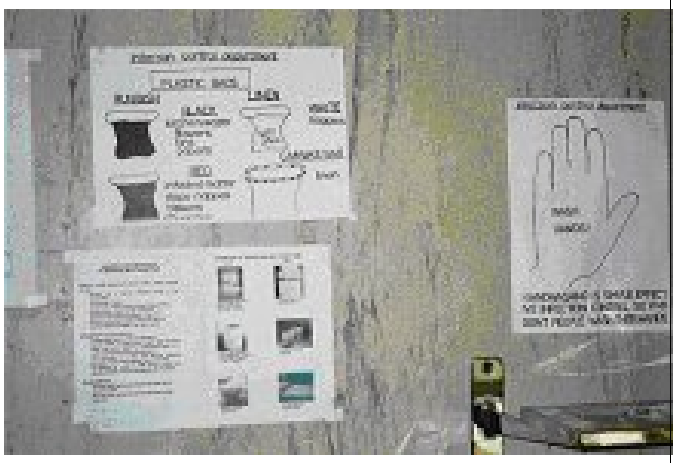
Segregation

Staff members showed that they are aware of the requirement for segregating waste and that they know what the different colours mean. There is, however, a high level of mixed waste found inside the cardboard boxes and other smaller containers.

The OPD Department showed a high level of awareness and in spite of a lack of rigid containers, staff members carried out strict segregation using the correct colour-coding inside cardboard boxes.

The use of the transparent plastic liners for both risk and general waste confuses the workers and leads to both genuine mistakes and apathy with regard to segregation. The shortage of red liners also forces the units to use other colours such as white liners (usually used for linen) or black liners (usually used for general waste). This confusion undermines the efforts made to segregate waste by using colour-coding.

Posters are displayed in nearly all the units and some departments have their own reminders about waste segregation.

Example of posters on display	Black Bin with Notice
The bottom poster is from Buhle Waste 	Notice: “Please: For food; tins & Flowers only Thank you” 

The positioning of the liners and containers, or the lack of containers for general waste, also leads to mistakes being made. In the past it has been the practice that general assistants must re-segregate incorrect items. This is a dangerous practice and should not be encouraged.

Containers

There is a shortage of containers throughout the hospital. Some departments make do with what they have got and sometimes use the inner part of the pedal bin. Where no containers are available, some departments use cardboard boxes with red, black or transparent liners and others hang liners from bracket or hooks.

There are in total 54 pedal bins used for risk waste and 165 used for general waste. There are in total 23 other types and sizes of plastic containers used for risk waste and 85 for general waste. The condition of many of the pedal bins and other containers is a source of concern. Many of the bins have been condemned, but no replacements have been received. Not all the containers had plastic liners.

There are in total 76 wire baskets. Most of the wire baskets are in average condition and are used with different coloured liners.

During the survey period, no overfilled boxes were found. There have historically been complaints that boxes are overfilled and are very heavy, particularly when used for napkins and other wet waste.

The lids on the sharps containers continue to be a problem. In one area, the lid is purposely left loose so that bottles can be disposed of. It is left to the individual departments to seal the containers prior to use. Some old sharps containers from the previous contractor are still in use.

Up to 200 ml bottles are placed into sharps containers. Other vials and bottles fill up the containers quickly in some sections.

Recapping of the needles is still done when taking blood and using the vacutainer. The needle is screwed into the plastic container and has to be removed before throwing away.
The procedure is to leave the cap on the table and when withdrawing the needle, to scoop the cap up with the needle, secure it in place, screw the needle off and discard it. The container is used again. This procedure is carried mainly in the OPD, Medical and Surgical Departments.

There is no provision made for wet waste such as secretions, blood and large amputations. Napkins are placed inside large waste boxes and this leads to overfilling and excessive weight. Large sections of plaster of paris have to be cut into several sections when disposing of them in the waste boxes. There are no long sharps containers for the disposal of trocars and other long sharps.

<u>The nursing, doctor's or blood trolley</u>
Mixed waste is found in the plastic liners attached to the nursing trolleys. The sharps containers are large and usually positioned on the bottom shelf making access to the top opening difficult. Concern has been expressed about the standard infections control procedures used when doing dressings.

c. Collection, storage and transportation

<u>Collection</u>
The general assistants collect the liners from the point of generation and transfer them to the intermediate storage area. They are placed either into the waste box or the black bin in the Sluice Room. During the survey, no unsealed boxes were found. However, there have been occasions where the sealing has not been done because there was no tape. There is no method for the sealing or closing of the black bags other than knotting them. Some departments place a sticker on them to it to identify the area or ward number.

They transport the filled risk waste boxes and general waste black bags out to the passageways for collection by the male general assistants. A variety of ways are used to carry out the transportation including over-bed trolleys, manual handling and dragging.

During the two week period of the survey, no overflowing or dirty dustbins were seen. The routines for waste removal are carried out very efficiently.

<u>Storage</u>
The internal storage areas for waste extend from being limited in capacity to being non-existent. The sluice rooms are mostly used in the ward areas. Where areas do not exist, the area makes do with what space they can use. Some departments use the small veranda outside the ward for storing the black bins. This tends to lead to a level of mis-segregation, as the bin is not readily available.

The storage places for equipment within the hospital are very poor. The containers, boxes and liners are kept in separate places, sometimes – but not always - due to space. There is generally a poor level of housekeeping maintained within these storage areas making access to the equipment difficult and unsafe. The ICU Unit stores their equipment on a bed in an unused cubicle.

Central Storage Area
The Central Storage area is generally well maintained, but is untidy where the cardboard and plastic containers are collected. The hygienic conditions around the food storage area could also improve. Ventilation is generally good but the area is not adequately secured from unauthorised entry. The general housekeeping around the skip area is sub-standard.

Internal transporting
The transporting of waste from the passageways to the Central Storage Area is carried out according to the hospital's time schedules. The trolley is used for both risk waste and general waste. The male general assistants doing the work, wore protective clothing. The trolley was on occasion loaded too high, and meant that the cleaner had to remove the top waste box in order to pass through the door to the outside.

External transporting
The collection of the waste and transporting to the treatment plant is carried out by Buhle Waste, approximately 18-20 times a month at varying times during the day. Collection notes are regularly filled in and signed by the Cleaning Department recording the quantities and types of waste containers removed. These notes are then sent to the Administration Department for filing.

No reconciliation is done of the numbers of containers removed with those that are purchased or distributed to the departments.

Mogale Municipality removes the skip approximately 8-10 times a month, when it is full.

Routines are regularly followed for the removal of recycled waste

d. Disposal procedures

Sharps and Infectious waste is disposed of by off site incineration. This survey did not extend to the treatment plants. This will form part of the Service Provider Project.

Chemical waste is not managed at all. Any waste is disposed of by throwing it down the drain.

The documented procedure for expired medication has not been followed. The medication is collected and stored by Pharmacy staff. Used medication is collected in a waste box.

e. Infection Control Standards

The Infection Control Department keeps a record of any reports made on communicable diseases. Staff members are afraid to report all incidents, as they are afraid to have their status known. Recently, a case of TB was reported to the compensation commissioner. Generally, these cases are handled either by management or employees go to their private doctors. The Infection Control Department does not keep HIV/AIDS statistics of staff and any records that are available are confidential and kept by management.

f. Occupational Health and Safety Standards

Minutes are kept of the committee meetings held and the chairperson submits an annual report to management. The annual report from April 2000 – April 2001 reported:

Item	Number	Comment
Number of scheduled meetings	**11**	Lack of commitment, leaves and shift work. Other commitments that are unscheduled take precedence over the Health and Safety Committee activities
Well attended	6	
Poorly attended	3	
Cancelled	2	
Injury claims processed	**20**	
Needle-stick injuries	8	5 doctors, 2 student nurses, 2 general assistants
Back strain	4	1 nurse, 1 porter, 2 general assistants
Fractures	4	3 nurses, 1 general assistant
Burns	1	nurse
Soft tissue injuries	1	nurse

Ms. Selepe reported that the attendance of Health and Safety Representatives at the meetings is very poor and there is no regular reporting of inspections.

No formal training has taken place for the committee members for management or health and safety representatives.

Activities conducted over the year include:

- A workshop for committee members on practical inspection of areas.
- A workshop for employees. A total of 98 attended
- A workshop on lifting techniques was conducted for nurses. Porters did not attend and another workshop was suggested.

The committee does not have a great impact on the hospital's day to day activities. Attendance at meetings is poor and there is very little follow up on incidents.

Areas that fall under the occupational health and safety banner that are relevant to waste are:

g. General hygiene and cleaning routines

The general assistants carry out their routines efficiently and regularly. They are largely responsible for collecting the waste and cleaning the bins. This is well done throughout the hospital.

The equipment used for the cleaning could improve with the introduction of a colour-coded system and a strict regime for the use of soap and disinfectants for specific applications. The mops and clothes used should be strictly controlled by using a colour-coded system for cloth, cleaning solutions and plastic containers. The sterilising and cleaning of floor mops could be improved. Some of the cleaners used the linen trolley with a plastic liner tied to the ring.

Laundry trolley used as a cleaning trolley

h. Protective clothing

No risk assessment has been done to identify the basic protective clothing needs. The general assistants do use gloves, but during the survey they were wearing the Latex gloves and not the issued yellow re-usable gloves. The issue of protective clothing is not documented. Supervision over the use of protective clothing is weak with the result that it is not always worn when required.

i. Incident reporting

Formal reporting of injury incidents takes place and the compensation documents are submitted to the compensation commissioner when necessary. Formal investigations only take place for major incidents.

There is an investigation report form for conducting investigations. Ms Selepe carries out these investigations. No formal investigation training has been conducted.

There is no structure in place for the reporting of 'near miss' or damage incidents.

Incident statistics are reported and discussed at the meetings. No detailed statistical analysis is done.

Reporting and investigation of needle stick injuries

Date	Person	Area	Incident
12 March 00	dental assistant	Dental	Pricked whilst removing needle
26 March 00	nurse	Ward 4	Assisting a doctor putting up a scalp drip
December 00	doctor	Theatre	Pricked right thumb while trying to reattach needle
27 March 01	nurse	Ward 15	Pricked right index finger while putting up drip
26 May 01	doctor	Theatre	Suturing needle during Caesarean
25 May 01	doctor	Theatre	Left index finger with surgical wire while taking wire out

No statistical analysis of incidents is carried out.

j. Occupational health monitoring and immunisation

No regular programme is in place for Hepatitis immunisation. The staff in the high risk areas of Medical, Casualty and Theatre, were last immunised in 1999. No baseline immunisations take place when new staff is employed.

No regular TB monitoring takes place. Employees are on medical aid and usually go to their private doctors.

k. Disaster plan

The disaster plan was being updated and was not available.

l. Inspection and auditing standards

The Infection Control Department carry out monthly inspections using a checklist. Other inspection routines that have taken place are the health and safety representative inspections and an annual inspection that Buhle conducts.

The last inspection was carried out on 11/09/2001. Comments made include:

- Medical waste in general waste bins
- General waste in medical bin
- Sharps container not closed properly.

There are no documented regular management inspections.

10. HEALTH WORKER KNOWLEDGE, ATTITUDES AND PRACTICES

The information in this section is a summary of focus group discussions that were conducted at Leratong Hospital with different categories of health workers:

- general assistants
- auxiliary nurses
- enrolled nurses
- senior staff and professional nurses including ward sisters
- doctors.

A total of seven focus groups were conducted at the hospital, involving sixty seven health workers. The purpose of the focus groups was to do the following:

- Explore the range of factors that impact on the behaviour and practices of staff at Leratong in relation to waste
- Explore the knowledge of staff about health care waste management
- Explore the attitudes to health care waste management
- Understand the roles and responsibilities in health care waste management.

The results of the focus group discussions with health workers at Leratong is summarised in the following categories:

- The use of liners and the overall health care waste management system
- The use of the Buhle boxes
- What happens to waste?
- Sharps containers
- The risks of waste
- Attitudes
- Reasons for mis-segregation and mistakes in HCWM
- Use of protective clothing
- Chemicals
- Sorting waste
- Staff relations
- Roles and responsibilities
- Problem solving
- Incentives
- Training and communication
- Terminology

10.1 Liners and the overall health care waste management system

The most striking finding is that the knowledge levels of staff at Leratong improve lower down the rank of hospital staff. General assistants have an excellent overall understanding of the waste system and doctors have the worst. This is graphically illustrated by the following quotes:

"*I also work in a Medical Ward. We also use black bags for left over trash from the patients like disposable food container and for bandages, gauze, gloves we use the red boxes and then we also use a "sharps" container for syringes, needles and any sharp object."*
general assistant

" *We are mostly worried about sharps containers. Other waste we don't know too much."*
doctor

In fact it was striking that in the focus group with doctors they made no mention of general waste at all and they struggled to recall other types of waste containersother than sharps containers. All categories of nurses understand the present health care waste management system. They were able to describe accurately how waste should be segregated, including differentiating between different types of waste and knowing which liner is for each type of waste. Nursing staff also spoke of the role of transparent liners. These are used to line waste paper baskets and for health care risk waste on the nursing trolley. The nurses described how these small transparent liners are then taken to the appropriate red or black liner depending on the waste inside.

10.2 The use of the Buhle boxes

It is surprising how little health workers have to say about the Buhle boxes given how integral they are to the health care waste system. In the focus groups with auxiliary and enrolled nurses most agree with the following statement:

"They (containers) are okay as they are."
auxiliary and enrolled Nurses

The general assistants speak about boxes being too heavy to be taken away and that sometimes it is necessary to repack the waste into additional boxes. Boxes that Buhle refuses to take also have to be resorted. In cases of where there are no boxes, general assistants report that they seal the red liners only. A suggestion from a nursing group is that boxes should be better labeled. The boxes must be marked dangerous and must clearly say that the waste is going for incineration. General assistants seal the boxes and nurses acknowledge that they overfill them.

" We (nurses) are the people all of us who discard in those bags and containers, not them (general assistants). We are the people that fill the boxes. They are sealing them, you know. So, we are the people that overfill them."
nurse

Doctors struggled to recall the Buhle boxes.

10.3 What happens to waste?

The general assistants know that general waste goes to the dumping site and health care risk waste goes for incineration. Although probably not everyone in

the focus groups was absolutely clear about this. The risks to scavengers at the dumpsite were widely quoted. One participant did go as far as saying:

"Sometimes there are gloves or syringes in the dustbin outside the ward. We have gloves that we can use to clean up so if I see a mistake I correct it because if I don't do it someone will collect the bin as it is and this will create problems at the waste disposal centre when things are mixed."
general assistant

10.4 Sharps containers

The category of staff that had most to say about the sharps containers was the doctors. The doctors could accurately be described as being preoccupied with sharps containers. They made very many comments about the hazards of needle-stick injuries. There were highly emotional descriptions about the extent to which needles are found lying on beds and on couches, even sometimes pushed into the mattress. One doctor described how the poor location of sharps containers creates a serious hazard:

"*It is still horrible. In an absolute state. Even now when you take blood, you look for the container and you are happy that you didn't prick five people on the way."*
doctor

It was felt that sharps containers should be placed closer to the beds or in each cubicle in Outpatients and Casualty. The present sharps container was also felt to be unsuitable to dispose of the needle and syringe together and that containers do get over filled with needles sticking out at the top. There was some debate about separating the needle from the syringe. This is a rare practice at Leratong. One comment made against introducing this practice was:

"*When it comes to work we have to be quick because we are so busy. There is no time to separate the needles and the syringes*."
doctor

Therefore if the separation of needles and syringes were to be introduced it would have to be well motivated because there is already resistance to such a practice. The general assistants noted that sometimes the lids do not fit correctly. A nursing sister raised the problem of how to dispose of larger empty bottles at Leratong. In fact she then described how she requests that the lid of the sharps container should not be fitted tightly so that it can be lifted easily to insert a larger bottle for disposal.

10.5 The risks of waste

Nursing staff is able to identify the hazards for the general assistants of poor waste segregation. This included possible needle stick injuries from needles being placed in plastic liners rather than sharps containers and the hazards of lifting overfilled or heavy Buhle boxes. Doctors felt that for everyone medical and non-medical staff alike needle-stick injuries are the overwhelming concern. The general assistants had most to say about the risks of waste because they feel

that they are at the receiving end of this. Their feelings about being exposed to infectious waste are also linked to feelings of not being appreciated.

" We do a lot of work and even risk our health and lives from highly infectious diseases but we are not appreciated."
general assistant

A lot of concern was raised in relation to sorting waste that has not been segregated properly. Whilst some participants in the focus groups felt that it is wrong to segregate waste and there is evidence elsewhere that the infection control sisters have promoted this, it is clear that many general assistants do find themselves sorting waste for one reason or another. This important disclosure is discussed again in the section "Sorting Waste." General assistants also feel that they are exposed to many highly infectious patients and are not giventhe same protective equipment as nurses. It was felt that the general assistant's best bet against infection is to be "vigilant."

10.6 Attitudes

Waste is felt to be a hazard about which you should be "vigilant." Attitudes to waste are very much related to whether workers feel that they are appreciated for the jobs that they do. A general assistant feels that if his / her health and safety is put at risk by the poor practice of others then clearly they feel undervalued:

" What they seem to be saying is that only educated people get infected some of us don't matter."
general assistant

Auxiliary and enrolled nurses also feel that the Department of Health does not care for them:

"If you get sick they say you are careless."
auxiliary nurse

Lower level nurses complained of being over stretched and felt that nursing sisters did not really care either. In the focus group discussion including senior nursing staff, there was a suggestion that the struggles of workers in the other categories of nursing are not always understood:

"If we are all committed we can sort it out, but you know there are people that are just lazy."
n*urse*

The attitude of doctors was very much that there is no time for waste management and that there are "*more important things*" than waste management.

10.7 Reasons for mis-segregation and mistakes in health care waste management

In all of the focus group discussions, it was significant that no one admitted to making mistakes in the segregation of waste even though the researchers were at pains to point out that the discussion was confidential. Many comments were collected from nurses and general assistants about this topic. Doctors were less forthright and felt that the only reason why mistakes occur is:

" They are occupied with examination. We have got no time to pay attention to waste."
doctor

This is interesting because the nursing groups identify doctors as the culprits:

"The doctors are the ones who are not up to date. They are the ones who make mistakes."
auxiliary nurses

Auxiliary nurses go as far as claiming that doctors are the "biggest culprits" in this mess. One reason given for the poor practice of doctors is the fact they know somebody else will clear up after them.

For the general assistants, the mis-segregation of waste is of huge concern. It was felt that mistakes are very common. Where poor segregation is identified, general assistants are in many cases required to resort waste before it goes to central storage. The general assistants offer many reasons for the poor segregation of waste. These include:

- Not having the right container in the right place
- Doctors and nurses not following rules
- Medical staff is too busy
- Carelessness on the part of nurses and doctors
- Deliberate mistakes
- Nurses not been called to order even when problems have been raised
- The fact that the cleaners are expected by everyone else to clean up regardless of who caused the mess
- Health workers finding it difficult to conform
- Doctors not disposing of gloves in the wards but in the black liners outside the ward or in their Tea Room
- Nurses not respecting instructions from the sister in charge
- No controls at night.

In the group discussions with all categories of nursing staff, it was acknowledged that nurses themselves are often the culprits of mis-segregation. The word *"negligence"* was used to describe their behaviour.

"It's not that they don't know, that is just negligence. But we all know there is not a sister that doesn't know the general waste and the medical waste. We sisters, especially, we order these plastics. We know the red plastic is for what."
nurse

Other reasons given by nurses for the mis-segregation of waste are:

- Not knowing where to discard of larger bottles.
- Having to use the wrong plastic because the right one may not be immediately available.
- Too busy or too lazy.
- Nurses and doctors feel that it is the duty of the general assistants to take care of waste that they have not disposed of, for example, waste left on the nursing trolley.
- Patients dropping litter
- Patients dropping wound dressings into black plastics.

10.8 Use of protective clothing and hygiene practices

Protective clothing is of greatest concern to the general assistants. Although they are supplied with gloves for cleaning there were several complaints about these. These include:

- The gloves tear easily.
- They are too large and water easily gets in because they do not fit close to the wrist.
- It takes a long time to get a replacement pair.
- Expected to keep one pair of gloves for the whole year.

The general assistants are also well aware that gloves do not protect them from a needle-stick injury.

The general assistants reported that they had recently been asked not to use the latex gloves used by medical staff. Latex gloves are felt to be expensive and it would be wasteful for general assistants to be using them. However this instruction feeds into a general perception that the health of the general assistants is less important.

"What all this means is that here in the hospital there are people in high places and they look down upon us as sub-human and they feel we don't matter. What they forget is that we are also mothers and fathers of children who depend on us, what if we get sick or die? So I use latex gloves whether they like it or not. They claim that we are wasteful but how are we supposed to protect ourselves? We have to take responsibility for our health and life for our children's sake."
general assistant

The other complaint about protective clothing concerned the availability of masks especially when strong chemicals are being used for cleaning and for sluicing used linen.

A nursing sister in one of the other focus groups also expressed concern for the safety of workers sorting out the washing. However it was felt that requesting masks would be difficult and unsuccessful,

"They will say that we are unduly demanding like they say about the gloves. They will say that we are wasteful."
general assistant

It was also felt that other hospitals provide workers with protective clothing for when you are cleaning the room of a highly infectious patient.

The auxiliary and enrolled nurses felt that there is not enough protective equipment and that the supplies get finished. They also said that they handle bloody swabs and bandages with bare hands. The lack of protective equipment was felt to contribute to a feeling of "*resentment and indifference*" towards proper waste management.

Doctors spoke of their frustration that there is no soap or cleaning solution to wash hands with. This they put down to theft. But felt it is unhygienic to work without soap.

10.9 Chemicals

Most of the participants in all of the focus groups had very little to contribute about chemicals. The general assistants felt that most of the chemicals they work with are harmless except for "strep" which has a strong smell and was thought to affect someone who is asthmatic. Empty chemical containers get refilled or disposed of next to the boxes and the black bags at the waste disposal area behind the ward. Some empty containers are collected and sold.

10.10 Sorting waste

The only category of health worker that had nothing to say on the sorting of waste was the doctors. Nurses acknowledged that they do request general assistants to sort mis-segregated waste before it is taken out of the ward for collection. General assistants felt that it wasn't their role to do this and they felt that waste should be properly segregated from the time it is discarded. Presently it is general assistants who bare the brunt for any misplaced waste.

From the tone of the discussion with the general assistants it would appear that some assistants probably regularly sort misplaced waste in the wards. Several examples were given from Maternity section. These included removing used sanitary pads from general waste or gauze from the food waste container. One of the advantages of the transparent packets is that it is possible to see the waste inside! Gloves are found in black bags. As well as sorting in the wards, one general assistant spoke of how they had to sort a smelly box refused by Buhle. Other general assistants in the discussion groups felt very strongly that it is not their role to sort waste. There is evidence of the correct disposal of misplaced waste happening in the hospital as well as the manual handling of waste.

" For instance the other day they (Infection Control) were checking how we dispose of waste. When they asked me what do I do when I find a swab in a black bag I told them that I don't remove the swab all I do is put the bag into the red plastic to indicate that there is infectious waste inside, I cannot use my hand to remove it. That's why I don't understand why they put their hands in plastic bags and sort the waste."
general assistant

In the nursing groups it was also reported that they have been involved in sorting waste that was rejected by Buhle. Indeed one senior nurse reported her own confusion about the sorting of waste:

"Now I had a problem last week because the infection sisters told them: "You are not supposed to put hands inside and discard these things out of the plastic. Just take the plastic." But I said: "No, sometimes we find the wrong thing in the wrong bag, so, I told them (general assistants) take the hands and take it out and put it in the right bags." So I'm not sure. Are they supposed to take the wrong things out, or just overlook it?"
nursing sister

10.11 Staff relations

General assistants and auxiliary and enrolled nurses had the most to say about staff relations. The overwhelming feeling is that there is very little teamwork and that workers are treated badly by those categories of workers who are considered above them. The general assistants feel that all "*waste problems are put on our shoulders."* They feel blamed and abused in the current system. Although senior nurses recognise that general assistants are unfairly treated and even said, *"You know, if she was my sister, I wouldn't be treating her this way,"* auxiliary nurses also feel blamed for the current problems. Some of their frustration is with ward management. Nurses complained that some nursing seniors do not get involved with ward work and that they are unappreciated. One participant had this to say:

"We only hear from them when we have made mistakes."
auxiliary nurse

There are clearly deeply held resentments with the present situation with nursing in the country. Nurses quickly spoke about their anger and grievances with the Department of Health with regard to new education and training requirements and salaries. Nurses also spoke of their fear of doctors. Whilst doctors felt that some nursing sisters can be very sharp on doctors, they are also scared to confront doctors. For this reason, doctor's behaviour goes unchallenged.

10.12 Roles and responsibilities

It is interesting that at both ends of the hierarchy, participants had less to offer about roles and responsibilities. Doctors went as far as saying that they *"don't have a role in looking after the health care waste system."* Their interface with the system is through the matron. They also feel that it isn't their role to talk to nurses about their behaviour.

Nurses had a great deal to say about roles and responsibilities. In particular the auxiliary and enrolled nurses who find themselves between senior nursing staff and the general assistants, had stronger ideas about who is responsible for what. In general it was felt that the general assistants are responsible for the containers and that they must seal the boxes.
In addition it was felt that general assistants should also ensure that the boxes are not overfilled before they are sealed. However it was also said that nurses must also see when they need a new container and fetch one when necessary.

The main job of the general assistants is to ensure that they sweep and collect waste from the floor and then remove waste from the ward. There are ward helpers at Leratong but they appear to have little responsibility for waste. They act as messengers from ward to ward, delivering documents and bloods. However at night the auxiliary nurses do all the cleaning and running errands. The general assistants take the black bags to the corridors and the boxes to a section where the waste is then taken to central storage. The male assistants collect the waste and take it to storage.

The nurses felt strongly that everyone is responsible for waste. However there wasn't agreement among participants about who is accountable for waste when things go wrong. Some participants felt that it is the job of the sister in charge, others felt that she oversees things and that everyone is accountable. Infection Control provides supervision and information dissemination to the wards.

"We are referring to Infection Control. They are the people that come to tell us what to do."
nurse

10.13 Problem solving

Wide ranges of comments were made about how problems are tackled at Leratong. The comments include:

- The present lack of investigation of needle-stick injuries
- Checking waste before it leaves the ward
- Having more staff to reduce the workload
- Wards sorting waste (this has been refused by Buhle)
- In-service training and the benefit of team work.

Although the present situation reflects the lack of teamwork, there are comments that reflect the willingness of staff to work together and being involved in multi-disciplinary teamwork.

"Its just that we try and help each other do the right thing, if for any reason she throws it in the wrong place I will alert her to it."
nurse

"We saw some nurses going into the other room. This is the first time that we have seen them going into a meeting about waste. I wish we were in the same meeting. The problem could be solved quicker."
general assistant

One example of effective practice happening at Leratong illustrates that teamwork is part of the solution.

"Mistakes used to happen in the past when we were given information separately from the nurses. The matron then realised that we work better as a team if we are all informed at the same time."
general assistant

A teamwork approach could also help to overcome the resentment and negative attitudes that have developed between cadres of workers when mistakes are raised.

" The thing is our general workers, they report us, so that, we the nurses are always on the alert, because they always report us to the seniors and say we are stubborn."
nurse

The general assistants feel that when there are mistakes, staff is not confronted and therefore the problems are perpetuated.

"For instance when there is a mistake we are told to tell the sister in charge. I have a feeling she does not tell them because the following day you find the same mistake."
general assistant

This is certainly the case with doctors:

"Usually when doctors make the mistake we just nudge each other and show surprise or disgust and correct the mistakes. We have no authority to confront them. Sometimes you leave the scene and go to the toilet."
auxiliary nurse

However confronting individuals about poor practice was felt to be an important part of solving the waste problems. One general assistant said that she attends the morning delegation meeting in the ward to see how duties are allocated *"and if for instance the problem is with injections then I confront the person whose duty it is that day and show her the mistake."*

There were two suggestions to strengthen the procedure when waste leaves the ward. The first is a suggestion that each ward should have people designated to check the waste before it leaves the ward and the second is that the waste should be resorted before it goes to central storage.

10.14 Training and communication

It is clear that different levels of health workers have been exposed to different types of training and information. Doctors complained of not being sufficiently informed:

"We were never informed. We were demanding it because of needle-stick injuries. We were quite upset."
doctor

Some of the nurses also felt this and even said, *"I don't think the doctors know what to do. We have been taught what to do."*

For other health workers, feedback to ward meetings from ward representatives is often the way that information is disseminated. The sister in charge often feeds back information to her staff and therefore is critical in the dissemination of new information. In one nursing group people felt that at Leratong they had been *"well taught*" and that if there is a big problem Infection Control will go from ward to ward. Someone even went as far to say that proper waste management is in "*our culture*" at Leratong. Although in one nursing group there was a general feeling that most of the knowledge they have about waste was obtained the hard way after making mistakes.

The general assistants and the doctors recalled the written circulars that are displayed on the walls but which are never referred to.

For the future it was felt that education for patients about general waste disposal is important and that new approaches to education and communication should build teamwork.

"I wish the meetings where these things are explained could include all staff so we all get the same message at the same time instead of the separate meetings that we normally hold. Then there will be no need for the resentment that we have against the nurses and doctors for carelessly exposing us to hazards."
general assistant

10.15 Terminology

Most importantly, the terminology used by participants is "*medical waste*." Health care risk waste is not at all understood. This has implications for education and communication. Other significant words that are commonly used are are "dumpsite" rather than landfill site and "negligence" for poor behaviour and job performance.